Improved interoperability eases SAN deployments. PAGE 42

The promise and peril of Web services. PAGE 6

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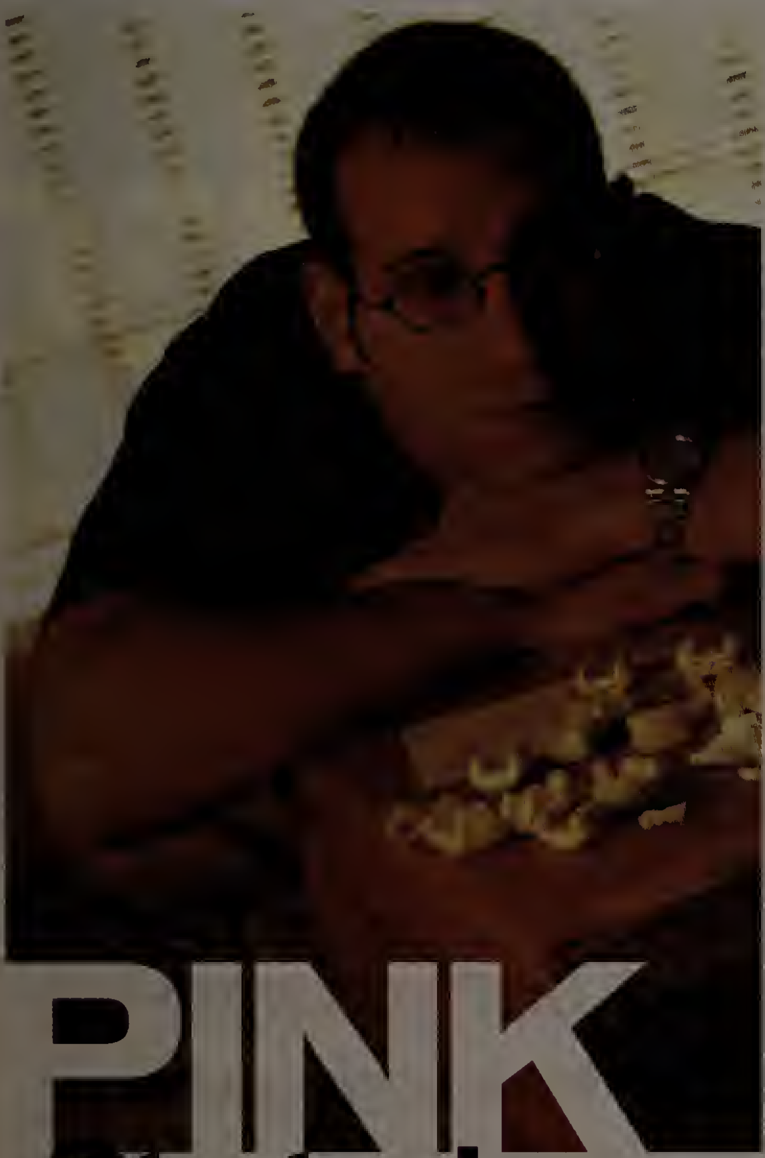

STAN BAROUH

PINK Strategies

Today's grim market realities are forcing IT workers like Stephan Koledin (above) to change their career outlooks and sort through the jobs that are out there. For some, this means networking at pink slip parties with a skeptical yet open mind.

IT HIRING 2002

Coverage begins on page 30.

IT DIFFICULTIES HELP TAKE KMART DOWN

Retailer files for bankruptcy protection; supply chain system problems persist

BY CAROL SLIWA

Long-standing IT woes played a contributing role in business problems that last week led Kmart Corp. to seek bankruptcy protection — making it the largest retailer ever to do so.

Charles Conaway tried to reverse years of constrained IT spending after he became CEO in May 2000, announcing a two-year, $1.4 billion investment that he said was the most money the company had spent on technology in a decade.

Yet, roughly a year and a half into the plan, Troy, Mich.-based Kmart now finds itself operating without a CIO, working to replace systems for which it took a $195 million write-off in September and still trying to fix a troublesome supply chain system.

"They had a plan that was a big-bang kind of approach, replacing a lot of things in a short time frame," said Steven Nevill, a consultant at Kurt Salmon Associates Inc. in Atlanta, which has worked on several Kmart projects. "I think they are going to be forced to look at replacing things incrementally over a longer time frame. . . . You have to go in with a surgeon's knife rather than a bomb."

Kmart last week announced that it had secured a $2 billion financing package to fund its turnaround and continuing operations. Conaway also said the retailer intends to continue to invest in "critical technology, standardized information technology platforms, merchandising opportunities and

Kmart, page 53

AT A GLANCE

Shopping List

Kmart's recent IT investments:

- Reconfiguration of distribution center network and implementation of new operating software across supply chain.
To be completed: Q2 2002
- Installation of NCR self-checkout registers in 1,300 stores.
Completed: January 2002
- Installation of IBM point-of-sale systems worth more than $200 million.
Completed: August 2001
- $70 million rollout of Symbol Technologies' handheld scanners, which enable inventory checking and ordering.
Completed: February 2001

FTC PROPOSES DO-NOT-CALL LIST

But anti-telemarketing move has tech hurdles

BY JENNIFER DISABATINO

A new nationwide database could put an end to dinnertime phone solicitations, but telemarketing firms are worried about how to integrate that list into databases on a monthly basis.

The Federal Trade Commission last week announced a proposal to maintain a "do not call" list of consumers who prefer not to be contacted by telemarketers. While only a proposal right now, as defined, it would require telemarketers to delete potential contacts from their marketing databases as often as once a month.

Individuals would sign up for the database at no charge but could still choose to be

Telemarketing, page 16

SEARS TRIPLES ITS STORAGE CAPACITY

95TB added for data warehousing, new SAN

BY LUCAS MEARIAN

Sears, Roebuck and Co. plans to deploy 95TB of new storage capacity by April, tripling the amount it now has installed and allowing the retailer to consolidate two key data warehouses and build a storage-area network.

As part of the project, Sears is putting its inventory and sales data warehouse and another warehouse that holds its customer information on a sin-

Sears, page 53

Data Catalogs

Sears is installing two EMC-based storage setups:

- Disk arrays with a combined capacity of **70TB** are being connected to a server that will **consolidate data warehouses** containing inventory, sales and customer information.

- Another **25TB** of disk capacity is being tied together into a SAN that will **link data** from Unix and Windows NT servers for use in product assortment planning and other applications.

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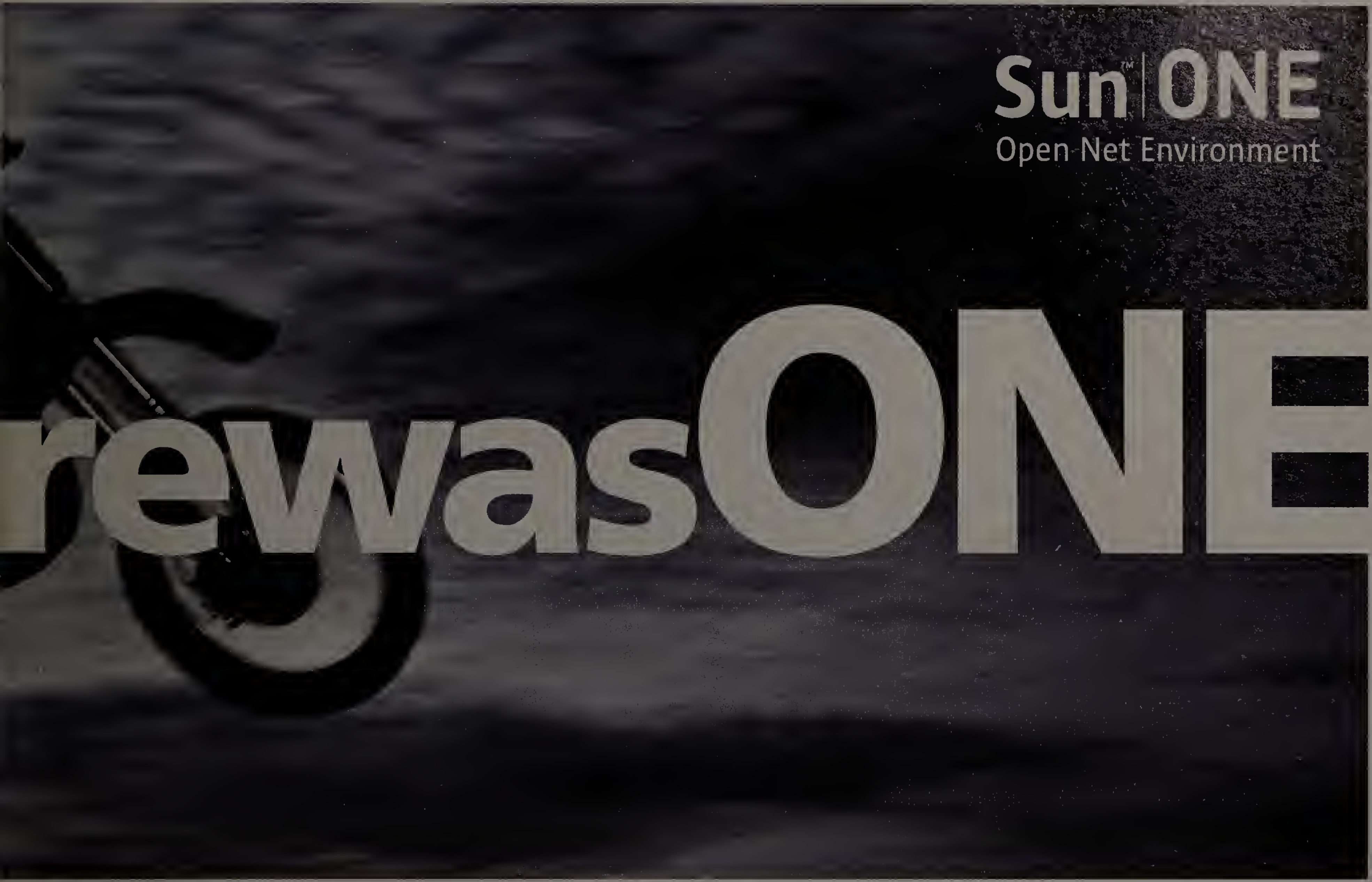

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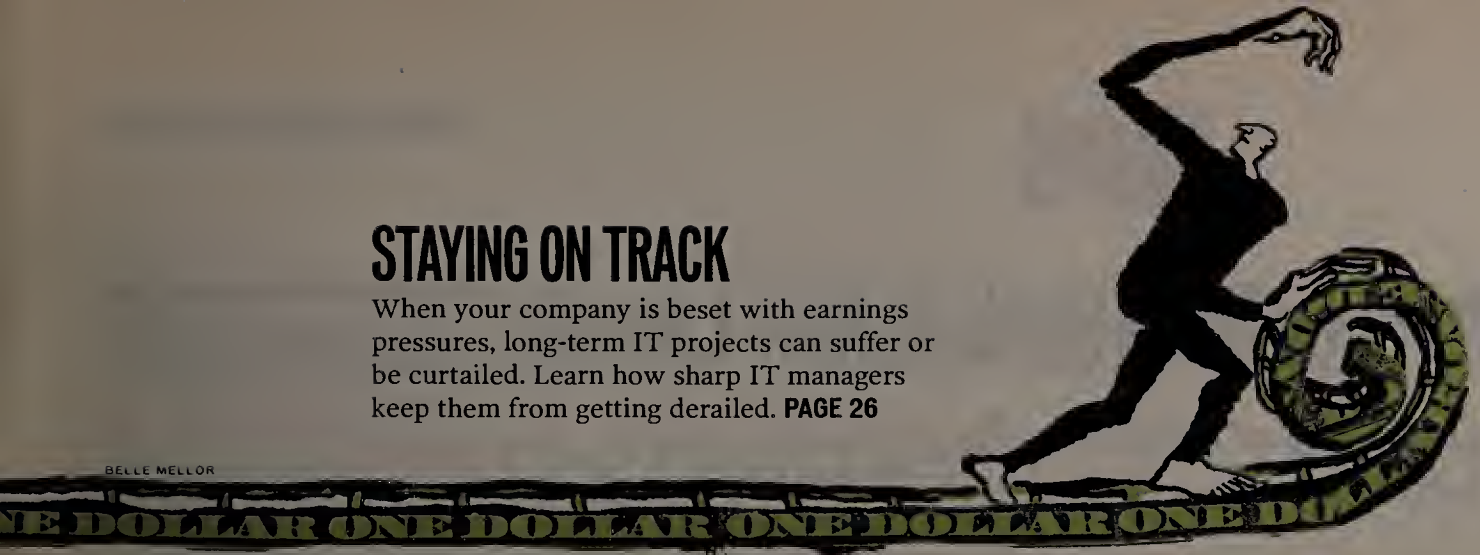
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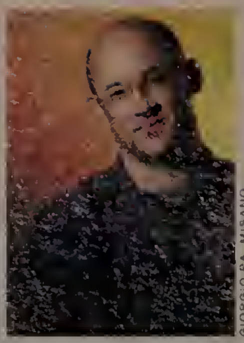
BELLE MELLOR

STAYING ON TRACK

When your company is beset with earnings pressures, long-term IT projects can suffer or be curtailed. Learn how sharp IT managers keep them from getting derailed. **PAGE 26**

LIFE MODELS

IT visionary Clay Shirky (right) says we ought to pattern computer systems after biological systems. Find out why he thinks so in this week's Future Watch. **PAGE 41**



GIORGIO PALMISANO

JANUARY 28, 2002

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7 The Global Positioning System needs the same level of federal protection as other critical infrastructures, security experts say.

10 Procter & Gamble takes the final steps toward linking a packaged contract and trade management system to its mainframes.

12 Skyrocketing fraud rates push financial services firms to investigate biometrics as a means of stopping identity theft.

14 Airlines turn to CRM technology to help manage ongoing scheduling changes in the months following Sept. 11.

Quick Link For breaking news, updated twice daily, visit *Computerworld.com*:

www.computerworld.com/q?q4000

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25 Joe Auer says it's standard procedure for software suppliers to insist upon audit provisions in their licensing agreements. But be careful to ensure that they don't impose onerous audit conditions that can lead to unreasonable penalties.

32 Pink slip parties can be a good avenue for laid-off IT workers to network and develop job leads, but attendees suggest going in with realistic expectations.

34 Software licensing opportunities are out there — especially for CRM and other enterprise packages. But extensive research and planning is needed before dealing with a savvy salesman.

37 Fran Quittel offers advice to an overseas IT director who hasn't updated his résumé in years and to a high school computer teacher with Visual Basic, C++ and Java experience who feels he isn't getting paid the market rate.

TECHNOLOGY 39

39 The real enemy of an economic recovery is "the next big thing," says columnist Nicholas Petreley.

40 QuickStudy: Color space is a model of all the colors that can be produced by a particular output device. Learn more in this week's primer.

42 SAN deployments have become easier because of increased interoperability, but assembling a system still requires careful planning.

44 Security Journal: When security manager Mathias Thurman reviews the corporate defense strategy, he finds that many doors have been left wide open to virus attacks.

46 Emerging Companies: Bocada Inc.'s software monitors backup data and storage server systems and offers detailed reports on the potential causes of backup failures.

OPINIONS 20

20 Maryfran Johnson says IT should watch Dow Chemical's pending rollout of its DowNet voice-over-IP project. It could indicate that the technology is ready for prime time.

20 Pimm Fox writes that by using XML formats, companies can create custom manuals, documents and reference materials for the masses.

21 Michael Gartenberg says Handspring's new Treo makes life simpler for IT managers who must integrate and support several wireless devices.

54 Frank Hayes offers a lesson out of Kmart's bankruptcy protection filing: Cut IT spending when business is bad, and your company may lose in the long run.

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ONLINE

CRM INFLEXIBILITY?

Consultant Doug Tanoury asks if most CRM implementations require businesses to fit the software instead of the other way around.
www.computerworld.com/ecommerce

IM FOR CUSTOMER SATISFACTION

Chicago-based OptionXpress explains why it loves instant messaging as a client services tool — and why a company vice president spends her days doing IM customer support.
www.computerworld.com/ecommerce

WHAT'S A QUICKLINK?

QuickLinks are an easy way to find Computerworld content online. On some pages of this issue, you'll see a QuickLink code pointing to additional, related content on our Web site.

QuickLinks include a full Web site address – such as **www.computerworld.com/q?a1500** – that you can type into your browser. Or you can head to the QuickLink page at **www.computerworld.com/quicklink** and type the QuickLink code – the five characters at the end of the Web address, after the question mark – into the box and then click on Go.

Use QuickLinks to get to related stories, discussion forums, research links, story archives and more.

AT DEADLINE

Beyond.com Files For Bankruptcy

Beyond.com Corp. in Santa Clara, Calif., has filed for bankruptcy protection and has agreed to sell its assets to e-commerce outsourcer Digital River Inc. in Eden Prairie, Minn., for $11 million in cash and stock. The Internet store management firm said the bankruptcy protection will allow it to serve its customers until the sale is completed.

ABN Amro Sets Up Neogration Unit

Chicago-based bank ABN Amro North America Inc. last week announced the creation of a business process software and services subsidiary called Neogration. Using a suite of tools developed in-house by ABN, Neogration will tie together disparate legacy systems to track an enterprise's financial processes.

Compaq Strikes Deal With Commerce One

Compaq Computer Corp. plans to offer prepackaged online procurement services on the desktops of its ProLiant servers. Using software from Pleasanton, Calif.-based Commerce One Inc., Compaq will target small to midsize enterprises and will offer the software through its global services division. Compaq also provided financial guidance for fiscal 2002 of 32-cent earnings per share, an increase of 7 cents from a previous analyst consensus.

Short Takes

Pleasanton, Calif.-based PEOPLESOFT INC. announced that it will reacquire its development spin-off, MOMENTUM BUSINESS APPLICATIONS INC. . . . COMDISCO INC. said a bankruptcy court has approved the sale of its Electronics and Laboratory & Scientific Leasing businesses to Stamford, Conn.-based GE CAPITAL's Commercial Equipment Financing unit.

Microsoft Faces More Perils in New Lawsuit

Netscape revives antitrust allegations; suit could result in massive financial damages

BY PATRICK THIBODEAU
WASHINGTON

Currenex Inc., a global currency exchange, still uses Netscape Communications Corp. servers, and other corporate enterprises do so as well. But Netscape isn't the emerging power it once was, having lost the so-called browser war and what would have been a pathway into corporate markets.

Netscape's biggest asset today may be its history. And that history may be worth billions of dollars to New York-based parent company AOL Time Warner Inc. if it succeeds in winning the lawsuit that it filed against Microsoft Corp. last week.

But AOL Time Warner is seeking more than money. It's a Microsoft competitor in instant messaging and online services, and it will urge the court to rein in some of Microsoft's business practices.

It will be a battle of titans, but it's a battle that will have no impact on Jim Kleckner, chief technology officer at Currenex in Menlo Park, Calif., or his servers. "Both companies are so big that this type of action wouldn't affect an independent product," he said.

Netscape was the government's star witness in its antitrust case against Microsoft. "A large percentage of the case focused on Microsoft's predatory conduct toward Netscape," said Stephen D. Houck, former lead trial counsel for the 18 states that were involved in the case against Microsoft.

Netscape can use the key finding in the government's antitrust case to build its own case, according to legal experts.

"This is a clear attempt by Microsoft's competitors to strip down the operating system," said Hillard Sterling, an antitrust attorney at Chicago-based law firm Gordon & Glickson LLC. "These competitors want to use Windows as a vehicle for their competitive software."

The nine holdout states that have refused to back the settlement the U.S. Department of Justice reached last fall also want to force Microsoft to produce a version of Windows that's unbundled from software add-ons. Remedy hearings are due to begin in March.

If Netscape succeeds, the financial damages could be massive. "There is little doubt that Netscape was driven out of business by Microsoft," said Steven Newborn, a litigation chief at the Federal Trade Commission until 1994. He's now an attorney at law firm Clifford Chance Rogers & Wells LLP in Washington.

In its defense, Microsoft can point to Dulles, Va.-based America Online Inc.'s own history with Internet Explorer. Company spokesman Jim Desler noted that in 1997, AOL chose to integrate Microsoft's Internet Explorer as its Web browser client. It then purchased Netscape but continued to use Explorer as the Web browser for AOL.

"So it's quite ironic that AOL seems to be suing Microsoft for this . . . when it's mismanaging its own business," said Desler. ◗

Going Into Battle

Netscape goes into court armed with the antitrust decision against Microsoft. But AOL Time Warner isn't a small fry. It's a powerful competitor, and Microsoft will capitalize on that. Neither company will win a jury's sympathy vote. Here's what AOL wants:

MONEY: If Microsoft illegally destroyed Netscape, what's that worth? Billions, say experts.

BUSINESS PRACTICE CHANGES: AOL Time Warner and Microsoft are competitors. AOL clearly wants to curb Microsoft's ability to bundle applications to its operating system.

Lotus Targets Cost Savings

Focus on 'near-term' ROI, collaboration with other apps

BY JENNIFER DISABATINO

This year's annual user's conference for Lotus Software Group will see no major product announcements; instead, it will take a hard look at using collaborative technology to save money for the enterprise.

Lotusphere begins today at the Disney World resort in Lake Buena Vista, Fla. The current business and travel climate, however, is cutting into the event's attendance.

Alain Raymond, a senior analyst for electronic messaging at Canadian National Railway Co. (CN), said that neither he nor anyone from his team would be attending the conference this year. Last year he was in the the spotlight at Lotusphere, touting CN's messaging solution using Domino.

The economy is certainly one motivation for the penny-pinching theme of the conference. But also factoring into the lack of new product announcements are a somewhat slow uptake on the current version of Lotus' Notes e-mail software and R5 Domino database, as well as the need to make any upgrades worthwhile investments, say analysts.

The Cambridge, Mass.-based subsidiary of IBM will unveil the brand name of its new version of Notes, which will predictably be R6, but it won't release the new product until the third quarter or later. In the meantime, Lotus Vice President Scott Cooper said, "We're going to talk over and over again around very near-term hard ROI."

Collaborative applications, such as those for Web-based meetings and online learning, can be used to cut business travel costs, Cooper said.

There is no new version release at the conference, he said, because R6, code-named RNext, isn't ready. "[Version] 6.0 will be a deployable release," Cooper said.

That's no surprise, said David Druker, an analyst at Ferris Research Inc. in San Francisco.

"It took customers a long time to convert to R5, and apparently there's still some R5 market out there," Druker said. "RNext will be another big change."

Customers want to make sure an upgrade will be worth every penny, he said, because, "it's not going to be cheap."

Cost awareness from the vendor is too little, too late, said Dana Gardner, an analyst at Boston-based research firm Aberdeen Group Inc.

"Suddenly, Lotus now has a religion about ROI? People who are really price-conscious have already left Domino," Gardner said. ◗

Lotus Sees The ROI Light

What attendees can look for at Lotusphere:

- The brand name and beta release of the next version of Notes, **R6** (formerly code-named RNext)
- ROI through **collaboration**
- A new hosted service for **Sametime**, Lotus' instant messaging application
- Integration of Lotus messaging and collaborative software into line-of-business applications such as **CRM and ERP**

Think Tank Calls for Better Protection of GPS Systems

Says satellites are 'critical infrastructure'

BY DAN VERTON
WASHINGTON

THE CONSTELLATION of 24 navigation satellites known as the Global Positioning System (GPS) has become a key enabling network for the nation's telecommunications grid, including the Internet. And as such, its protection is a matter of national security, argue public- and private-sector security experts.

As a result of the Sept. 11 terrorist attacks on the U.S. and the increasing threats posed by hackers skilled in wireless forms of attacks and sabotage, a homeland security task force is calling on the Bush administration to add GPS to the list of critical national infrastructures that require increased security. The task force is sponsored by The Heritage Foundation, a public policy think tank in Washington.

The problem, according to a report issued by the task force earlier this month, is that the two principal presidential orders dealing with critical infrastructure protection — one signed by President Clinton in 1998 and the other by President Bush last year — don't include GPS on the list of critical systems. The task force is calling on the Bush administration to issue a new presidential order that includes it.

"The most relevant threat is jamming signals and interfering with signals," said Maj. Barry Venable, a spokesman for the Pentagon's Space Command in Colorado Springs. GPS signals, which are critical to ground-based switching operations for voice, data and video networks, are easy to jam, he said.

Moreover, "it's possible to intercept the downlink signal, provided you had the proper interception equipment," Venable said. "In the military, we encrypt all of our data, but that is not necessarily happening in the commercial sector."

"The time-reference standard GPS can provide does govern such things as time-dependent encryption," said Bill Malick, director of risk and advisory services at KPMG LLP in Stamford, Conn. "A failure there could expose financial networks to possible failed transactions."

Satellite-related network failures have already occurred in the private sector. In May 1998, for example, PanAmSat Corp.'s Galaxy IV satellite malfunctioned, shutting down 80% of the nation's 40 million pagers as well as thousands of bank card and gas station credit card transaction systems.

GPS satellite signals can be jammed, warn experts.

San Diego-based Qualcomm Inc. supports the task force's recommendation. The wireless communications vendor's location technology is being deployed in millions of cell phones, including those offered by Kansas City, Mo.-based Sprint PCS Group as part of a nationwide Enhanced 911 system that's capable of pinpointing the location of people who place 911 emergency calls from wireless phones. The company's gpsOne Wireless Assisted GPS also supports real-time asset-tracking.

In addition to public safety applications, GPS supports a vast array of ground-based networks, including the Internet. The loss of GPS would cause a "ripple effect throughout other networks," said Jonas Neihardt, vice president of federal government affairs at Qualcomm.

"We feel unequivocally that GPS should be designated as a critical infrastructure by the Bush administration," said Neihardt. "We depend on GPS to ensure timing for other key infrastructures."

Allen Thomson, a former CIA scientist, said, "Defending our satellites is going to be a whole lot harder than people have been letting on. If I had to worry a lot about a particular satellite system, GPS would be the one." ◗

Former Microsoft Exec Begins Federal Critical Infrastructure Protection Job

Starting today, **Howard Schmidt,** former chief security officer at Microsoft Corp. and onetime field sergeant for the Chandler Police Department in Arizona, takes on an entirely new set of responsibilities. Schmidt has turned in his Microsoft credentials to begin a new job in the White House as the vice chairman of the president's new Critical Infrastructure Protection Board under Richard Clarke.

SCHMIDT: "Security issues are industry issues."

Schmidt discussed his new position and objectives in an e-mail interview with *Computerworld*'s Dan Verton last week.

What was it that attracted you to this job? One of the areas that I strongly support is private/public partnerships working together to solve many of the challenges facing us in the [critical infrastructure protection] space.

I was very impressed with the dedication and passion that Dick Clarke and John Tritak [director of the Critical Infrastructure Assurance Office at the U.S. Department of Commerce] brought to the table in building trust with the private sector.

A few days after Sept. 11, I got a call from their office inviting me to join the team as the vice chair of the [Critical Infrastructure Protection Board]. With the tragic loss of thousands of innocent people, I felt duty-bound to return to public service to help any way I could.

Exactly what do you envision your role to be? Dick and I have talked about this, and looking at our respective backgrounds, I will most likely focus on law enforcement, public safety, [Defense Department] issues and the public/private-sector partnership outreach. Dick will focus on national security and government systems.

This does not mean that we have hard lines drawn as to what we will handle, but it means that we will do what has to be done to provide for a stronger, more robust, resilient critical infrastructure.

Microsoft has drawn a lot of criticism about the security of some of its products. As you leave for Washington, what do you see as Microsoft's strengths and weaknesses in this area? One of the difficult things I have had to deal with has been the ever-changing threat picture. The continuous cat-and-mouse game of attack, fix, attack, fix has been difficult to deal with.

I have said many times that security issues are industry issues and that solutions go beyond technology and involve people, processes and policies.

I do not know that anyone can predict what the next generation of threats will bring, but focusing on hardening software out of the box and implementing fundamental changes based on lessons learned will go a long way to reducing the attack surface. ◗

AT A GLANCE

Schmidt's Career

EDUCATION:
- B.A., business administration
- M.A., organizational management

EXPERIENCE:
- Police officer, Chandler Police Department, Arizona
- Computer investigations instructor, FBI Academy
- Special agent, U.S. Army Reserves, Criminal Investigation Division
- Computer forensics specialist, FBI National Drug Intelligence Center
- Director, U.S. Air Force Office of Special Investigations, Computer Forensic Lab and Computer Crime and Information Warfare
- Chief security officer, Microsoft Corp.
- President, Information Systems Security Association
- President, Information Technology Information Sharing and Analysis Center

Web Services Projects Pose Challenges for IT Managers

Users warn about technology issues ...

BY MICHAEL MEEHAN

ALTHOUGH Microsoft Corp. and other software vendors are pushing Web services as the next big thing, users and analysts warned last week that companies looking to implement the conceptually simple technology had better be prepared to do a lot of work.

The Simple Object Access Protocol (SOAP) and other Web services technologies may create an easy conduit for shuttling information between different applications. But deploying the technologies in applications that provide reliable messaging, security and workflow capabilities isn't so easy.

"Some of the issues are more complex than we thought they'd be," said Rick Klausner, director of e-commerce and Internet development at UnumProvident Corp. Last year, the Portland, Maine-based insurer wanted to use Web services based on Microsoft's .Net platform to create online insurance forms for agents and policyholders.

But UnumProvident found that it needed to construct an entire set of workflow rules and validation routines to make the concept work, Klausner said. In the end, it decided to hold off on newer Web services technology and limited the project to Microsoft's C# programming language and Visual Studio.Net development tool.

Paul Stubbs, a systems consultant at UnumProvident, said the company also didn't realize how closely it would have had to work with IT staffers at other companies if it went forward with the Web services work. In addition, he cited potential performance issues and said IT managers have to watch how Web services technology affects corporate networks. For example, Stubbs said, UnumProvident plans to develop a Web services messaging repository to control the flow of applications in and out of its network for future projects.

Dan Sholler, an analyst at Meta Group Inc. in Stamford, Conn., said companies will have to create some sort of middleware control layer to manage Web services as the technology proliferates.

Vendors of development tools, integration technology and application server software all support Web services. But, Sholler said, users "need something independent of all of those things that determines how you process the services and what you make visible to the outside world."

For many users, though, caution still rules the day.

CareTouch Inc., a Concord, Calif.-based company that sells health care products and services via the Web, is a case in point. In its first Web services implementation, CareTouch intentionally targeted only its smallest suppliers to use a new set of standardized order forms because of concerns that SOAP wouldn't be reliable enough on a larger scale, said Prasuna Dornadula, the company's chief technology officer.

CareTouch is also taking steps to shore up its network for Web services before embarking on other business-to-business projects. Instead of waiting for vendors to create a guaranteed delivery protocol, Dornadula said he plans to install a traditional message brokering system to ensure that Web services arrive at their intended destinations.

Andrian Danescu, CIO at Sumitomo Mitsui Banking Corp.'s Manufacturers Bank subsidiary in Los Angeles, said the bank sees Web services as a potential way to better serve its retail and corporate customers. But it fears the extra work involved could spike the cost of developing such projects, Danescu added. ◗

Reporter Lee Copeland contributed to this story.

Web Services' Crystal Ball

Here's what Meta Group foresees for Web services:

- **During 2002** early adopters will use Web services integration in their e-business and CRM applications.
- **By 2003** Web services' creation capability will be an automated part of most development environments.
- **By 2004-2005** Web services' frameworks for business-to-business will be standardized, but adoption will be piecemeal and vary among vertical industries.

WEBWATCH

... and cite potential security problems

BY JAIKUMAR VIJAYAN AND CAROL SLIWA

WEB SERVICES deployments can pose a potent security risk for companies that don't implement the technology correctly, according to analysts and experienced users.

IT managers who are building Web services "really need to look at what it is you're planning to do" from a security perspective, said Peter Osbourne, manager of the advanced technology group at Dollar Thrifty Automotive Group Inc.'s Dollar Rent A Car Systems Inc. subsidiary in Tulsa, Okla.

Dollar used Microsoft Corp.'s Simple Object Access Protocol (SOAP) tool kit to set up a link last May between its reservation system and Southwest Airlines Co.'s Web site, enabling users of the site to rent cars. But because Southwest was concerned about the safety of using SOAP to directly link applications between the two companies, a middle layer comprised of a so-called socket connection and listener was added, Osbourne said.

The middle tier translates requests from Southwest's site into SOAP messages, which call into a Dollar Web server and then go through firewalls and integrity checks before they reach the car-rental reservation system. Return messages go back the same way, Osbourne said, adding that more firewalls between Dollar's Web server and the rest of its network prevent unauthorized access.

The technical requirements for securing Web services aren't fundamentally different from what it takes to protect almost any other Internet-based application. But such services can still pose a serious security risk because they typically involve linking internal corporate applications with external ones, said John Pescatore, an analyst at Stamford, Conn.-based Gartner Inc.

That's especially true because many of the tools that support the development of Web services are based on largely untested technologies such as XML and SOAP, Pescatore said. For example, SOAP is designed to send Web services requests via HTTP. Pescatore said that lets it pass easily through firewalls, making it possible for intruders to use SOAP tunnels to launch attacks against networks.

Controlling the Process

Pete Lindstrom, an analyst at Hurwitz Group Inc. in Framingham, Mass., said security considerations shouldn't stop companies from using Web services to share services or application functionality. But extensive authentication, credentialing and access control technologies are needed to ensure that only valid users can access Web services, he said. Measures must also be taken to guarantee the confidentiality and integrity of the information that flows through Web services links.

Take New York-based i-Deal LLC, which has developed an XML-based Web service that lets loan originators such as auto companies and mortgage lenders get information on the availability of financing.

Basiru Samba, chief software architect at i-Deal, said the company uses two firewalls: one to separate its Web server from its back-end systems and one between the Web server and the Internet. Any data requested from the back-end system has to pass through both firewalls before users can access it. I-Deal also uses public-key infrastructure services and passwords, Samba said. ◗

AT A GLANCE

Security Allowances

Requirements for securing Web services include the following:

- Authentication tools that let companies offering Web services **verify the identities of users.**
- Authorization and access control features for ensuring that only **legitimate users can access services.**
- Session-level confidentiality mechanisms to **stop unauthorized users** from viewing information.
- Session-level integrity capabilities that **prevent service-request data** from being modified.

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BRIEFS

Yahoo, Amtrak Offer Wireless Net Service

Passengers on three popular Amtrak train routes can surf the Web on wireless handheld computers for free under an agreement between Amtrak and Sunnyvale, Calif.-based Yahoo Inc. For the next six months, Washington-based Amtrak will offer wireless Internet access on routes between Washington and Boston; Sacramento, Oakland and San Jose, Calif.; and Chicago and Milwaukee. Passengers will use Compaq Computer Corp. iPaq Pocket PCs to access the service.

Nextel Signs $234M Outsourcing Deal

Nextel Communications Inc. has signed a $234 million, five-year IT outsourcing deal with Electronic Data Systems Corp. in Plano, Texas. EDS will manage Reston, Va.-based Nextel's corporate data center, database administration, IT help desk, desktop services and other technical services. Sun Microsystems Inc. was selected as the platform provider for the contract.

Distributed Computing Aids Anthrax Research

The National Foundation for Cancer Research (NFCR) announced last week that its NFCR Center for Computational Drug Design at Oxford University in England has teamed with Microsoft Corp. and United Devices Inc. to create a system that uses spare computer processing cycles around the world to analyze anthrax molecules.

Short Takes

IBM and VERISIGN INC. said they will collaborate on developing, selling and integrating online authentication services for e-commerce. . . . HEWLETT-PACKARD CO. said it has developed technology that it can use to build complex molecular-scale chips simply and inexpensively.

GE Looks to Automate E-Procurement Billing

Purchase orders, invoices to be translated into XML format for faster processing

BY MICHAEL MEEHAN

HAVING found that electronic purchasing doesn't necessarily speed up the pace of business by itself, General Electric Co. this year plans to automate much of the back-office paperwork that's putting a drag on its e-commerce efforts.

While GE's operating companies can buy goods and services electronically, reconciling purchase orders, supplier invoices and shipping documents with one another so bills can be paid is still a time-intensive manual process in many parts of the conglomerate.

By year's end though, GE plans to launch a portal application that will automate the reconciliation process through its electronic data interchange (EDI) subsidiary, GE Global eXchange Services Inc. (GXS) in Gaithersburg, Md. GXS will translate EDI, Web-based and spreadsheet documents into an XML data format and then make them available online to suppliers and GE's buyers.

GE is acting as a beta-test site for the settlement service, which GXS plans to offer to other companies outside of GE starting in the second quarter. Data translation, workflow rules and database hosting will all be handled by GXS, which hasn't set pricing yet.

It Won't Be Easy

The idea is to speed the purchasing process, enabling companies to achieve the quick-payment discounts and lower inventory costs that were expected from online procurement projects. But for GE, implementing the new settlement system won't be simple.

"It's a Herculean effort — I'm not going to kid you," said Michael McGettigan, a manager in GE's corporate initiatives group. "This cuts across purchasing, finance and manufacturing. It's a complete change in the way we approve and settle purchasing."

John Hagerty, an analyst at AMR Research Inc. in Boston, said purchase order and invoice settlement is still a labor-intensive process at most companies. "When we've been talking about e-commerce over the past few years, we've really been focused on simple buying and selling," he said. "This whole [payment] process has been sitting off to the side."

GXS and San Diego-based rival Peregrine Systems Inc. both already offer the ability to create EDI-based invoices directly from purchase orders, a service that can also automate the settlement process. But that's primarily limited to users who buy products under prenegotiated contracts that set prices in stone.

For example, the U.S. Army's Tank-Automotive and Armaments Command (TACOM) implemented an EDI-based settlement system in 1993 and added Web-based procurement capabilities through Peregrine's EDI and online exchange three years ago.

TACOM, which manages 3,200 weapons systems for the Army and buys $6.7 billion worth of goods annually, claims that it has cut its invoicing time from 28 days to one and has virtually eliminated inventory backlogs.

"When we did it, no one was looking," said Pat Dempsey-Klott, e-business program manager at TACOM. "But it's that [invoice] processing time which really saves you money in the end." ◗

AT A GLANCE

Getting Settled

As part of its planned purchase order, invoice and shipping notice settlement system, GE plans to do the following:

- **Use** the GXS application integrator to turn all documents into Web-accessible XML files.
- **Develop** Java-based workflow rules for handling things such as exceptions and data variances among documents.
- **Work** through GXS to set up a database for storing all settlement information.

P&G Unit Aims IT at Contract Monitoring

System automates problem resolution, compliance work

BY MARC L. SONGINI

Procter & Gamble Co. (P&G) is putting the final touches on a new contract and trade management system, making it one of the highest-profile users to bet on packaged software designed to automate those jobs.

Cincinnati-based P&G's food services division began using the Unix-based system in November to monitor contracts with its customers. The consumer product giant is now completing interfaces to a few more of its legacy systems.

The technology is expected to pay for itself by next January, said Derek Christian, an IT account executive at P&G, although he declined to disclose the cost of the project.

The new system is built around software from Portland, Maine-based I-many Inc. that automates processes such as contract compliance monitoring and the resolution of billing problems.

P&G will eventually tie the contract system into San Mateo, Calif.-based Siebel Systems Inc.'s customer relationship management applications, which P&G is rolling out to its sales force in a project that's due to be finished by April.

Contract management software "is one of the sleeping giants of the [applications] market," said Joshua Greenbaum, an analyst at Enterprise Applications Consulting in Daly City, Calif. But the software can be challenging to install and requires a "tremendous amount of integration to be really effective," he added.

In addition, Greenbaum said, user interest "kind of got squashed" last year as online marketplaces — one of the prime targets for the software — lost steam. The applications also aren't cheap: Greenbaum said the average price of purchase deals he surveyed last year was $250,000.

At P&G, the I-many application is handling contract compliance across all of the distribution channels that the food services division uses — a task that Christian described as "incredibly complex." P&G's mainframe systems weren't flexible enough to handle the variables involved in selling through so many channels and to so many customers, he said. ◗

P&G's Compliance Watchdog

What the project involved: P&G installed I-many's software on Hewlett-Packard Co. Unix servers. The work began last January and was largely completed by November.

How the system works: When contracts are signed, the software automatically accounts for service fees, volume discounts and other sales incentives and then audits transactions to ensure that contract terms are being met.

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Banks Eye Biometrics to Deter Consumer Fraud

New security measures for financial services will explode in next three years, say experts

BY LUCAS MEARIAN

CITIBANK is looking into the feasibility and cost of using biometric technology as a more efficient and secure method of identifying its customers. Meanwhile, Huntington Bancshares Inc. is studying the impact of identity theft and fraud with a close eye on biometrics as a possible approach to reducing the chronic problem.

WHAT IT MEANS

Biometric *technologies use a person's unique physical or behavioral* **characteristics,** *such as a fingerprint, voice or iris pattern, to* **validate his identity** *almost instantaneously.*

Indeed, a growing legion of financial services firms are considering adopting biometric systems, which use peoples' unique physical or behavioral characteristics, such as fingerprints or voice patterns, to identify them. Skyrocketing fraud rates and heightened security concerns in the wake of the Sept. 11 terrorist attacks have helped spark interest in biometrics.

According to Meridien Research Inc. in Newton, Mass., consumer fears and losses due to fraud are strong enough incentives for institutions to invest large sums of money in biometrics as an alternative to personal identification numbers. And with 500,000 cases of identity theft in the U.S. each year, consumers are ready to accept biometrics at the cost of decreased privacy and more intrusive methods of identification, said a recent Meridien report.

Deutsche Bank AG in Frankfurt and New York-based Citibank have been using biometrics for several years for employee access to computer server rooms, Meridien said.

Tom Connaughton, managing director of risk management at Citibank, said his company wants to be a leader in extending biometrics technology to customers, providing them with several identification options, such as fingerprint and facial recognition technologies, so they can choose the one with which they're most comfortable.

Having customers use biometrics to gain access to accounts is the only way for the bank to know for sure who its dealing with, Connaughton said.

Steady increases in fraud have led more financial institutions to invest in biometrics. In 2000, companies spent $127 million on biometric devices; fingerprint scanners accounted for about 44% of those sales, according to Meridien. Facial recognition technologies made up 14% of overall sales, hand geometry 13%, voice recognition 10% and iris scans 8%, according to Meridien.

Spending to Counter Losses

By 2004, the financial services market will spend about $1.8 billion annually on biometric technology, according to IDC in Framingham, Mass.

According to a report to be released this month by Gartner Inc. in Stamford, Conn., one in 12 online consumers surveyed said they have been victims of identity theft, or someone else using their personal information to steal money or buy products. Meanwhile, 1.13% of all online transactions are lost to fraud, representing billions of dollars in losses each year.

Meridien said biometrics is a good fit with banking because the technology can offer "security to customers at [automated teller machines (ATM)], within branches to authorize transactions and for online banking." It can also be used inside companies to secure vaults and monitor access to doors and computer systems, said Meridien analyst Christine Barry, who co-authored the report.

Huntington Bancshares in Columbus, Ohio, performed a study of biometric technology three years ago. At the time, the technology had too many problems associated with it, according to Huntington CIO Joe Gottron.

"The initial setup was quite cumbersome at the time, and the technology had limitations in sharing biometrics data at the time between ATMs. Basically, we stepped back and said it doesn't make sense at the time to push the envelope of technology," said Gottron, who started working at Huntington Bancshares a little less than a year ago.

He now has a team working on defining fraud's impact on the bank. Once that study is complete, sometime within the first half of this year, Gottron may commission another biometrics study to see which technology would fit best.

"There's going to be a lot happening [in biometrics] in the next three years. I'm going to stay close enough to biometrics, given the new world we live in, to make sure we make a move on it when the business case warrants it," said Gottron.

Bogus charges associated with online credit card fraud are estimated to amount to as much as $24 million per day, totaling nearly $9 billion in 2001, Meridien estimated.

Identity theft is considered the fastest growing crime in the U.S., with about 500,000 to 700,000 people affected annually, according to the Social Security Administration in Baltimore. ▶

Fraud Facts

Identity theft accounted for 42% of the 204,000 consumer fraud complaints filed last year, by far the largest source of complaints. The following round out the top 10:

10%	Internet auctions
7%	Internet services and computer complaints
6%	Shop-at-home and catalog offers
5%	Advance fee loans and credit protection
4%	Prizes, sweepstakes, gifts
4%	Business opportunities and work-at-home plans
4%	Foreign money offers
3%	Magazines and buyers' clubs
2%	Telephone pay-per-call and information services

SOURCE FEDERAL TRADE COMMISSION

Want Access? Give 'em the Finger

First Financial Credit Union has been using seven fingerprint biometric kiosks for just over a year. Yet only 100 of its 70,000 members use the fingerprint function.

"The problem we have is getting members comfortable with the kiosks," said Carlton Musmann, senior vice president of the retail division at West Covina, Calif.-based First Financial. "Once you sell them on the kiosk, they're sold on the product."

First Financial paid about $350,000 for 10 fingerprint biometric kiosks from Saflink Corp. in Bellevue, Wash.

The kiosks offer all the services that a branch office would, including applications for new accounts and loans, but at a fraction of the cost of opening a new office.

Purdue Employees Federal Credit Union (PEFCU) installed a fingerprint-identification system six years ago. Like First Financial, PEFCU has yet to experience a single case of card fraud involving any of the customers who use that system. The credit union regularly suffers losses from fraudulent ATM card holders.

West Lafayette, Ind.-based PEFCU was one of the first financial services firms to use fingerprint-identification technology in its self-service kiosks. Purdue University officials originally asked the credit union to open branch offices on remote campuses. But the branches lost money, so the credit union looked for a less expensive alternative.

"The real reason we did this was the increased functionality at the kiosks. We were uncomfortable using [personal identification numbers]," said Gail Koehler, vice president of technology at PEFCU, referring to the ability to apply for loans and open new accounts at seven kiosk locations.

The kiosks, from Real-Time Data Management Services Inc. (RTD) in Norfolk, Va., scan in an account holder's fingerprint. The system then calculates 1,024 points on that fingerprint to create seven bits of data. The data is stored at the kiosk where it was created and in a central database.

Once a customer's fingerprint is scanned in, all he must do is enter an account number and have the machine rescan his finger.

Both credit unions have chosen a database over a smart card method to store the customer data because "the credit union would otherwise have to reissue all of their ATM cards," said Rick Scally, vice president of RTD.

However, Ted Iacobuzio, an analyst at TowerGroup in Needham, Mass., says he advocates the use of chips or smart cards for storing fingerprint data because fingerprint databases create a scalability problem for global enterprises.

– Lucas Mearian

It would have been a great day in Detroit...

...too bad the proposal is still in Denver.

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BRIEFS

Solaris 9 Moves to Final Beta Stage

Sun Microsystems Inc. rolled out the final test version of Solaris 9 last week, offering a peek at new management, security and Linux-friendly features that will be included when the final version of the operating system is shipped midyear. Sun released an early-access version at the end of last year.

NHL Chooses Sun After Ejecting IBM

Sun last week also announced a technology and marketing alliance that makes it the premier technology provider for the National Hockey League in New York. Sun will fill a gap left after the NHL gradually ended a previous alliance with IBM. The deal includes hardware, software, storage and services for the NHL and certain marketing rights for Sun.

Dell Units to Power NFL, Super Bowl

Dell Computer Corp. is working with the New York-based National Football League to make sure Super Bowl XXXVI is a technical success, providing the systems that will process game-day statistics and manage behind-the-scenes tasks. Dell officials said the work is part of a 12-month deal in which the NFL will install servers and storage systems from the vendor and Hopkinton, Mass.-based EMC Corp.

Apple Co-founder Seeds GPS Company

After having helped establish Apple Computer Inc. 26 years ago, Steve Wozniak is now aiming to make Global Positioning System (GPS) devices cheap, plentiful and indispensible to businesses and individuals. Wozniak said last week that he's launching a new business that will focus on designing wireless products for tracking everyday things.

Airlines Spurred to Focus on CRM Software After Attacks

Alaska Airlines, British Airways rush to install automated customer contact tools

BY MARC L. SONGINI

Alaska Airlines Inc. went live earlier this month with a full implementation of customer relationship management (CRM) software that automatically notifies travelers about flight changes. The rollout came two months later than the original go-live date, but there was a valid reason: the Sept. 11 terrorist attacks.

Immediately after the attacks, Seattle-based Alaska Airlines decided to quickly install a stripped-down version of the telephone-based notification system to help it deal with the chaos that resulted from numerous flight cancellations and schedule changes.

Implementers rolled out the basic software within two days through a round-the-clock effort, and the airline estimates that it had reached 100,000 customers with personalized messages by Nov. 6.

"I don't know if we could have made it through Sept. 11 and all the rescheduling without this [system]," said Karen Wells-Fletcher, manager of network operations at Alaska Airlines. "We just don't have the manpower to call everyone personally."

Alaska Airlines, which is using software from Seattle-based Par3 Communications Inc., wasn't the only airline that rushed to beef up CRM technology after the terrorist attacks. For example, London-based British Airways PLC rapidly expanded a Web-based self-service information response system built around software from RightNow Technologies Inc. in Bozeman, Mont.

British Airways had been running a pilot version of the system with a few large travel agencies in the U.K. and some U.S. users prior to the attacks. But after the airline saw a 400% surge in queries, it opened up the CRM tool to all U.K.-based travel agencies to ease the information logjam, said Dave Bevan, general manager of e-service at its e-commerce unit.

Now, he said, British Airways plans to roll out the CRM software to a wider set of customer groups, including the U.K. executive club. The software, which AT&T Corp. hosts, will also be part of e-mail marketing campaign efforts, Bevan said.

Neither British Airways nor Alaska Airlines, which also runs its system in a hosted setup, would comment on the cost of their projects.

At Alaska Airlines, Wells-Fletcher said, the automated notification system freed up call center personnel who were already overwhelmed by a flood of information requests from passengers. Previously, customers had to call the airline to inquire about canceled or rescheduled flights, and there was limited outbound phone contact.

Wells-Fletcher said the expanded version of Alaska Airlines' system can send out thousands of messages in a matter of minutes and lets travelers reschedule flights via phone, without help from airline employees. ▶

Quick Link Find out how an Australian airline got help from CRM during bankruptcy proceedings: www.computerworld.com/q?26681

Caterpillar Logistics Turns to Rival for Help

Inks unusual ASP deal to help reduce transportation costs

BY JAIKUMAR VIJAYAN

Caterpillar Logistics Services Inc., a wholly owned subsidiary of heavy equipment maker Caterpillar Inc., is using the services of a rival to help it reduce annual transportation costs.

In what analysts said is an unusual move, Peoria, Ill.-based Caterpillar last week signed up rival Schneider Logistics Inc. as its application service provider (ASP) for transportation logistics technology.

Under the deal, Caterpillar Logistics will use the Schneider Utility for Managing Integrated Transportation (SUMIT) suite of applications to provide transportation management as well as shipment information on all of its North American truck shipments.

Schneider's technology will allow Caterpillar to choose from among multiple modes of transportation to optimize costs for inbound and outbound shipments while providing the ability to track and trace material in transit, said Rachelle Kunz, a Caterpillar spokeswoman. The agreement will also allow it to have a centralized operation for managing its transportation requirements.

Competitive Market

The decision to use Green Bay, Wis.-based Schneider as an ASP was made based on an assessment of its capabilities and the fact that it supports the same decision support tools Caterpillar Logistics uses, Kunz said.

"The [third-party logistics] landscape is a very competitive one, with thin margins and a lot of players," said Michael Bittner, an analyst at AMR Research Inc.'s Irvine, Calif., office. "This is a pretty unique deal. Schneider obviously had a value proposition that met Cat's needs."

The deal also highlights the increase in attempts by third-party logistics firms to expand into the hosted services arena in a bid to differentiate their offerings, said Adrian Gonzalez, an analyst at Dedham, Mass.-based ARC Advisory Group Inc.

The SUMIT suite, which Schneider is now offering as a hosted service, was originally developed for internal use. The Web-hosted application supports functions such as carrier and mode selection, a rating engine, online tendering, shipment tracking and freight payment.

"We are offering it more like a service that supports a business process and to solve a specific business problem," said Schneider CIO Steve Matheys.

"To a certain extent, it takes us away from what we've been doing, but it allows us to leverage our technology base much better," Matheys said. ▶

AT A GLANCE

Friend and Foe

Caterpillar will use Schneider's SUMIT application suite for the following:

- Carrier and mode selection
- Shipment tracking
- Online tendering for bids
- Freight payment

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CEOs: Broadband Is National Priority

High-tech leaders lobby Washington for nationwide service but remain silent on cost

BY PATRICK THIBODEAU
WASHINGTON

HIGH-TECH CEOS are urging the Bush administration and congressional leadership to make broadband deployment a national priority, worthy of the same attention President Eisenhower gave the interstate highway system.

"This is important to all industries," said Lars Nyberg, CEO of NCR Corp. in Dayton, Ohio. "This technology will give every industry the opportunity to fundamentally change the way they operate with substantial productivity and efficiency improvements."

Nyberg, Dell Computer Corp. Chairman and CEO Michael Dell, Intel Corp. CEO Craig Barrett and Motorola Inc. CEO Christopher Galvin, released a report last week that set specific deployment goals.

But the proponents of this plan haven't shared a lot of details about its potential cost. And they have avoided making specific recommendations on some of the more pressing broadband issues in Congress, such as the Tauzin-Dingell Broadband Bill, sponsored by U.S. Reps. W.J. Tauzin (R-La.) and John D. Dingell (D-Mich.). That bill would end line-sharing restrictions now imposed on Baby Bells, the companies formed from the breakup of AT&T Corp.

Work Out the Details Later

Instead, high-tech groups are urging the White House and congressional leaders to first make broadband a national priority and work with industry to iron out the details.

Bernard Campbell, CIO at Sonoco Products Co. in Hartsville, S.C., said he can see the potential benefits of ubiquitous broadband access, but he's wary of the cost. Telecommuters at his $2.7 billion packaging company use existing services and get "a fair amount of productivity," he said. But without a cost/benefit analysis of the high-tech plan, he said, it's difficult to assess its merit.

Prepared by the Computer Systems Policy Project, a Washington-based organization representing high-tech CEOs, the report released last week said the country's economic expansion is dependent on broadband deployment. It recommended that by the end of 2003, 80% of U.S. homes should be able to get data at 1.5M bit/sec., and 50% of the nation's homes should be able to receive data at 6M bit/sec. The group also called for nationwide 100M bit/sec. access by the end of the decade.

Boost Internet Use

Broadband would likely help Columbia House Co., a New York-based seller of music and movie recordings, by encouraging more people to use the Internet.

"It would make it more efficient," said David Woltmann, who runs the company's financial systems. Woltmann said he believes a lot of home users are discouraged by slow connection speeds.

A national broadband push would be of particular benefit to telecommunications firms.

"The telecom industry is in a severe depression, and what they are trying to do is jump-start their way out, while at the same time solving the overall major economic malaise," said Danny Briere, CEO of TeleChoice Inc., a Tulsa, Okla.-based consulting firm. "A major broadband program is a great way to do that."

But Briere questioned the need for 100M bit/sec. service. He said a 1.5M bit/sec. connection in every home would do "more for the economy near-term than 100M bit/sec. is going to do over a 10-year period." ◗

The Goals

Steps the Computer Systems Policy Project says the U.S. should take to ensure ubiquitous broadband service by end of decade:

FAST GOAL: By the end of 2003, 80% of U.S. homes should have access to at least 1.5M bit/sec. service, with 50% able to get 6M bit/sec.

END GOAL: By the end of the decade, 100M bit/sec. service should be available nationwide.

REGULATORY REFORM: Strip away regulations that hinder broadband deployment, especially in the final connection to homes and businesses.

FUNDING: The U.S. should fund broadband research and development.

Continued from page 1

Telemarketing

contacted by specific companies. The do-not-call proposal wouldn't apply to nonprofit organizations.

Kevin Brosnahan, a spokesman for the American Teleservices Association in Washington, said it's difficult enough for his organization's members to stay on top of the do-not-call lists maintained by 20 states, which require bimonthly or quarterly updating, as well as a private database maintained by New York-based Direct Marketing Association Inc.

Both industry groups are fighting the proposal, mostly on its legal and political merits. They cite the harm it would do to what the Direct Marketing Association calls a $668 billion industry, as well as First Amendment concerns.

"Doing a merge and purge out of your database, even quarterly, is difficult," Brosnahan said. He added that some companies might have to hire someone just for that task.

Mitchell J. Katz of the FTC said there are no guidelines yet on what technology would be used to create and maintain the database or on how telemarketers would be expected to access that database and then compare it to their own.

"There's going to be a long public comment period where people can comment on that," Katz said.

In addition to the lack of technology guidelines for the database itself, the proposal doesn't indicate exactly how consumers would register.

That's a concern, said Jim Fleming, Connecticut's commissioner of consumer protection. Connecticut is one of the 20 states with a do-not-call list.

"If the federal government is going to do this, you need to allow people to sign up electronically online," Fleming said. During the initial rollout of Connecticut's registry, the state received 2,000 to 3,000 online and phone sign-ups per day. "There is no 800 number that can handle that kind of volume," said Fleming.

In one year, some 739,000 people signed up in Connecticut, out of a state population of approximately 3.5 million.

The Direct Marketing Association's 25-year-old do-not-call list has 4.1 million people on it, the organization said in a press release attacking the FTC proposal. ◗

Reporter Patrick Thibodeau contributed to this report.

AT A GLANCE

Quiet Dinnertime?

Some provisions of the FTC's do-not-call proposal:

- A central do-not-call list maintained by the FTC would enable consumers to stop calls from all companies within the FTC's jurisdiction.
- A consumer on the central do-not-call list could still receive telemarketing sales calls from specific companies or charitable organizations if he has provided his express, verifiable authorization.
- Telemarketers would obtain express, verifiable authorization by confirming the transaction in writing prior to submitting the customer's billing information for payment.

IBM Readies Linux Mainframe

BY ASHLEE VANCE

IBM plans to ship a Linux-only mainframe that's expected to cost about half the price of its current machines, which support both Linux and the company's z/OS operating system.

The dedicated Linux system is due for release in March at a starting price of less than $400,000 for a four-processor model, IBM said. Targeted uses include consolidating print, file and Web server applications that run on multiple Unix and Windows servers.

By comparison, "if you wanted to do Linux on a mainframe today, you would start at over [$1 million]," said Mike Chuba, an analyst at Gartner Inc. in Stamford, Conn.

Joe Poole, technical director at Boscov's Department Stores in Reading, Pa., has carved up part of his mainframe to run a variety of file, print and database applications under Linux. Putting those in different computing partitions on a single system has helped Boscov's cut the amount of hardware in its data center, Poole said. ◗

Vance writes for the IDG News Service.

SAP to Consolidate Market, Portal Units

E-business customers are target of shuffle

BY MARC L. SONGINI

SAP AG LAST WEEK said it's folding its Web portal and online marketplace and procurement subsidiaries into one unit to make it easier for customers to cobble together a unified e-business infrastructure.

The maker of enterprise resource planning and other business applications announced that it's consolidating its SAP Markets Inc. and SAP Portals Inc. companies into one as-yet-unnamed entity. It will offer users a single access point to software that handles supplier relationship management, business intelligence and marketplaces, as well as other products that will enable collaborative processes throughout an enterprise and out to customers and partners.

The new unit will be headed by Shai Agassi, who formerly ran SAP Portals. The consolidation should be complete by the end of the quarter, Agassi said, adding that the new company may need to hire new staff rather than lay off workers.

The 5,000 companies that own products from the two subsidiaries will likely be dealing with the same field personnel as before, he noted.

Some analysts said the move makes managerial and technological sense. It will now be easier for SAP to deliver turnkey portal and marketplace applications that work over heterogeneous systems and enterprises, and to extend data and business processes to non-SAP shops and software, said Joshua Greenbaum, an analyst at Enterprise Applications Consulting in Daly City, Calif.

The company still needs to roll out the technology that will permit users to integrate their systems with non-SAP applications.

The Competitive Landscape

The reorganization appears to contradict SAP's previous claim that its portal unit would partner with other business-to-business software vendors, said Karen Peterson, an analyst at Stamford, Conn.-based consultancy Gartner Inc.

Although the partnership between the two subsidiaries and Pleasanton, Calif.-based Commerce One Inc. to sell online marketplace technology will continue, marketplace vendors like Commerce One will view the new subsidiary as a direct competitor, Peterson said.

SAP will also have to rationalize its assorted technologies to deliver a complete platform. That could mean rolling out a portal offering with combined collaborative and transactional capabilities, Peterson said.

In a separate announcement, SAP last week reported modest revenue growth for the fourth quarter. Net income for the quarter was $283 million, dragged down by the one-time costs of SAP's acquisition of San Jose-based TopTier Software Inc. and additional investments in Commerce One.

In the same quarter last year, SAP posted a net profit of $324.6 million. Excluding exceptional items, net income for the quarter would have been $335 million, up slightly from $331.7 million in the same period a year ago, SAP said. ▶

JUST THE FACTS

Grand Opening

NAME: Undecided

FORMERLY: SAP Markets and SAP Portals

CEO: Shai Agassi

CHAIRMAN: Hasso Plattner

HEADQUARTERS: Palo Alto, Calif.

PRIMARY BUSINESS: SAP says it will offer a Web portal, online marketplace and electronic-procurement platform that will integrate heterogeneous systems.

OPENING DATE: By quarter's end

NUMBER OF PERSONNEL: 1,700

IBM Bolstered by Its High-End Hardware

Opening servers to operating systems is key, says VP

BY LEE COPELAND

IBM earlier this month reported that its net income in its fourth quarter was down 10% from the same period a year ago. Even so, IBM officials said the company completely sold out of its Regatta p690 servers, which debuted in October, and experienced its first increase in revenue for mainframes in 11 years.

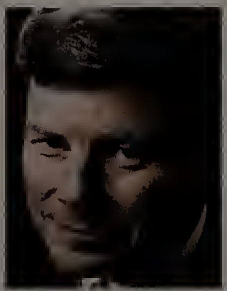
Bill Zeitler, IBM's senior vice president and group executive for the server unit, recently spoke with *Computerworld* about what the company is doing right on the high end.

IBM and Hewlett-Packard recently reduced their Unix server prices to compete more aggressively against Sun Microsystems. Is a price war on the way? From my point of view, the price dynamics in Unix servers changed a couple years ago with [IBM's S80 servers], which brought a new set of cost advantages to the market. The costs are lower because they share processors across a variety of products, and they do two to three times the work per processor that HP could give, at a better price/performance [ratio].

IBM has several proprietary operating systems. Are those going away? This is a very important point. The reason the z900 is doing so well is because we accommodated the z/OS to do new Linux work or Apache work on the same system. And that gives the customer a deployment choice.

And what about IBM's mainframes? The z900 series mainframe was greeted with strong market acceptance one year ago. The most important thing about that is the idea that, going forward, we allow Linux or Web applications to work and run on any of these platforms. That offers an attractive choice as people consolidate their work onto reliable and industrial-grade mainframes.

Do you think the merger of HP and Compaq Computer – or these companies as separate entities, if the merger falls through – will have a negative or positive impact on the market? I won't comment on the merger. Both of these companies independently said that they would go to an Intel-based architecture, and that causes some concern among their customers — not because it's a bad thing to do, but along the lines of how their current investment in HP systems is protected. Anytime there is uncertainty in the customer's situation — and this happens whether they merge or don't merge — it creates an opportunity. ▶



ZEITLER: "Anytime there is uncertainty . . . it creates an opportunity."

BRIEFS

AOL Denies Report of Red Hat Acquisition

AOL Time Warner Inc. said last week that it's not in talks to purchase Red Hat Inc. *The Washington Post* reported Jan. 19 that sources said New York-based AOL Time Warner was in "fluid" negotiations with the Linux developer and was considering pairing its America Online Internet software with Red Hat Linux. A spokeswoman for Research Triangle Park, N.C.-based Red Hat declined to comment.

Palm Splits Units

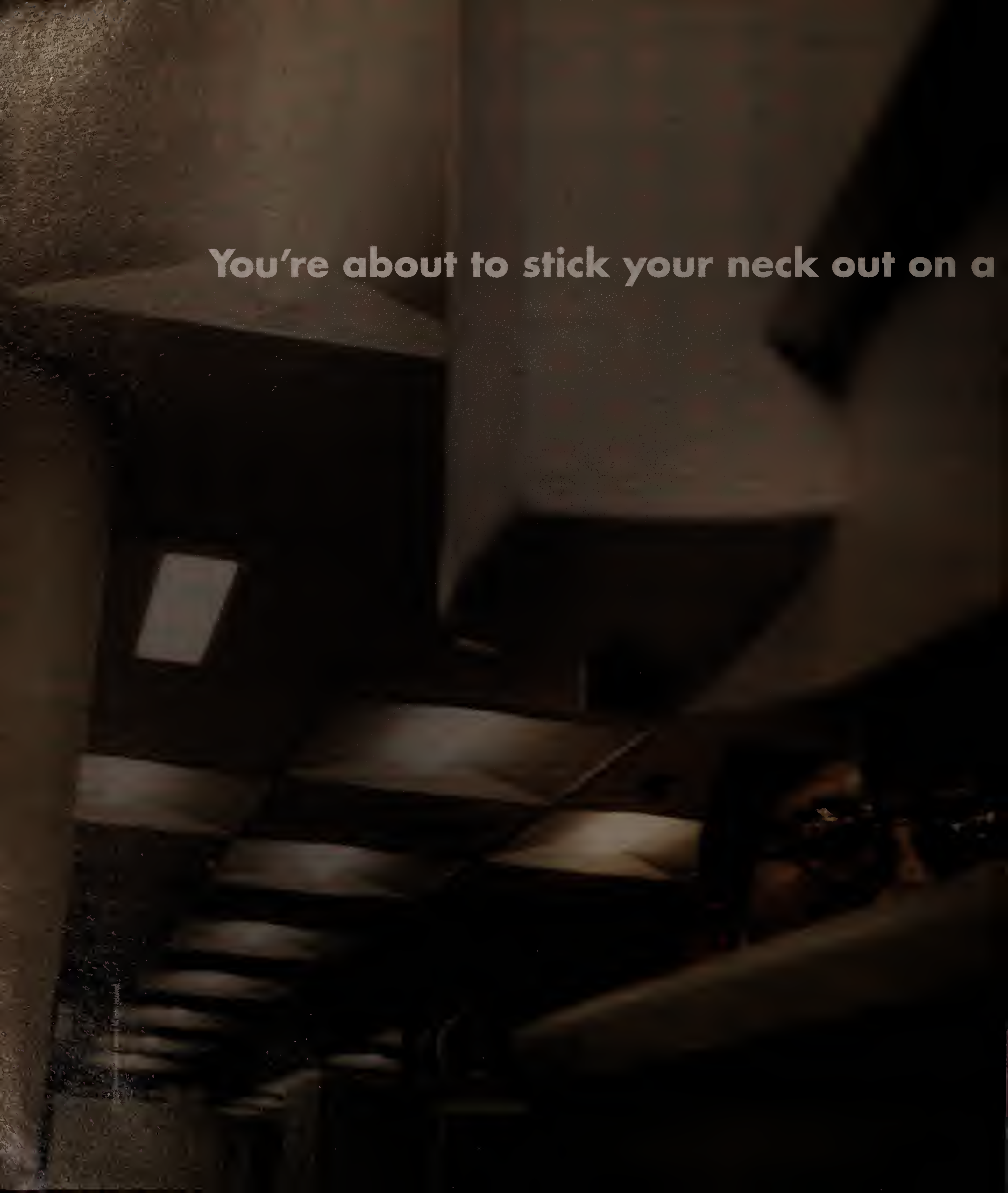
Santa Clara, Calif.-based Palm Inc. has spun off its software development and licensing business to encourage manufacturers to license its Palm OS operating system for personal digital assistants. The Palm OS unit will now be separate from the hardware unit, the Solutions Group, said Palm.

Asia-Pacific Serves Up Intel's Biggest Market

The Asia-Pacific region, excluding Japan, accounted for 35%, or $2.4 billion, of Intel's fourth-quarter revenue in 2001, compared with 33%, or $2.3 billion, for the Americas. Intel reported fourth-quarter net income before acquisition-related costs of $998 million, down 62% from a year earlier. Revenue for the quarter was $7 billion, down 20% from the same period a year ago.

Short Takes

Islandia, N.Y.-based **COMPUTER ASSOCIATES INTERNATIONAL INC.** claimed strong growth in earnings and revenue in its third quarter ended Dec. 31, reporting a net loss of $231 million on revenue of $749 million. . . . **LUCENT TECHNOLOGIES INC.** in Murray Hill, N.J., reported a pro forma operating loss of $757 million in its first quarter ended Dec. 31, compared with a loss of $1.4 billion for the same quarter a year ago.


You're about to stick your neck out on a

server decision that will finally update your data center. The problem is, it's hard enough predicting what will happen next quarter, let alone next year. So how can you be confident that the infrastructure choices you make today are choices you can live with tomorrow?

One option now has to include the new HP server rp8400—a rack-optimized breakthrough designed specifically to help you manage the enormous infrastructure demands generated by today's constantly evolving business environment.

It's small enough to fit two to a rack yet provides unprecedented power and flexibility in a mid-range server. In fact, we've made room for up to 16 processors, setting new standards in the category for both performance density and scalability. The kind of power you need to more easily manage and control workload allocation.

Best-in-class dynamic partitioning essentially divides the server into sections, allowing each one to function independently. So even if one application goes down, the other sections of the server continue their jobs unaffected. Which makes it possible to move resources around without having to shut down your entire system, sidestepping costly downtime.

And with the convenience of HP Utility Pricing, processing power and other services can be made available on tap, like electricity. So you can easily and securely scale online without having to invest in expensive hardware or support.

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MARYFRAN JOHNSON

The VOIP Vanguard

WHEN A $30 BILLION global company starts rolling out an "emerging" technology to 50,000 users around the world — right smack in the midst of a recession — you start to suspect something has already emerged. Something that really saves money. Something ready for prime-time corporate consideration.

MARYFRAN JOHNSON is editor in chief of *Computerworld*. You can contact her at maryfran_johnson@computerworld.com.

That's why you should watch attentively as Dow Chemical unfurls DowNet, its voice over IP (VOIP) network, this spring at 450 sites in 35 countries. This integrated IP voice/data network, being built in partnership with Electronic Data Systems and Cisco Systems, signals a substantial, pioneering commitment to VOIP by a Fortune 100 company.

The Dow story figured prominently last week in our Knowledge Center on Enterprise Networking, a special report that you can find in print and online at *www.computerworld.com/q?k1200*.

Reading Dow's story, and other reports from smaller pioneers on the same frontier, it struck me how once again the imperfections of a newer technology become less compelling than the business reasons behind taking the risk.

Dow is gambling on a standard, IP-based technology — an increasingly safe bet, actually — rather than submitting to a very expensive upgrade of its proprietary private branch exchange (PBX) telephone system. But saving money isn't the sole driver here. Having the ability to move quickly and to flexibly plug new users into its work processes around the world is expected to give the company's acquisition strategy a big efficiency boost.

Dow plans to deploy new IP-based multimedia applications, which will enable regional, Web-based call centers to offer better customer service via real-time collaboration.

As our story also noted, the Midland, Mich.-based chemical giant is already learning some key lessons during this massive deployment — such as the value of baby steps vs. a big bang. As EDS set about deploying new VOIP capabilities for Dow, the outsourcer discovered that rolling them out one at a time across the enterprise minimized incompatibility problems. In essence, they found a less disruptive way to roll out a disruptive technology.

Another version of that approach is the more gradual one of coexistence, which appealed to Lego Systems Inc., a division of the Danish toy maker. Lego is rolling out a VOIP software upgrade to its existing Avaya Systems PBX, allowing the company to play with various IP phone scenarios without disturbing existing telephone users.

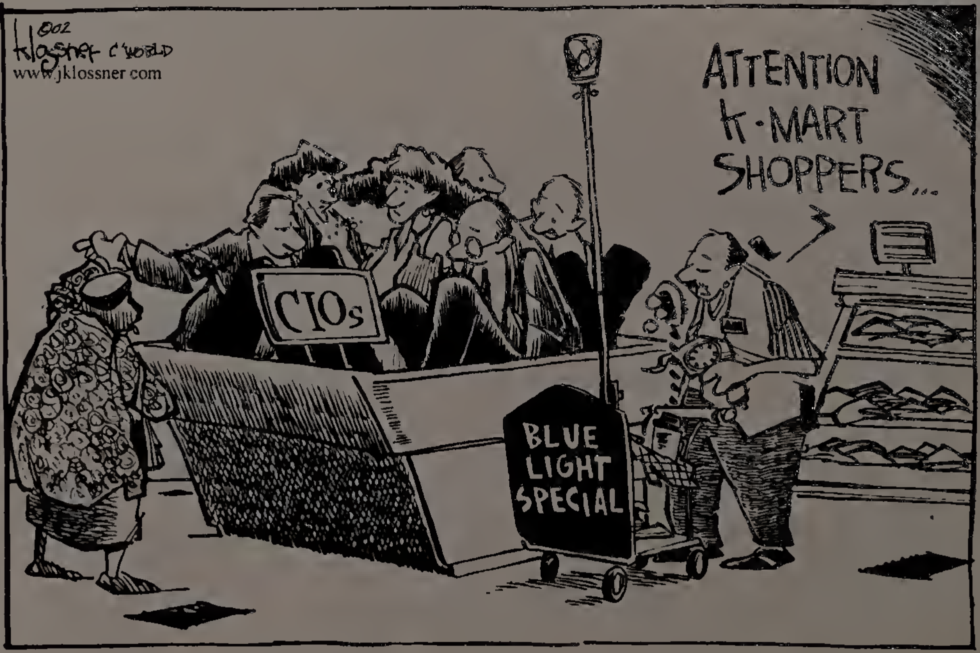
Of course, VOIP, which converts analog voice signals to digital signals and blasts them over IP networks, still has some notable detractions. It's light on security features, it's prone to voice quality problems, and it's shy on workable service-level agreements and often goes begging for available technical talent.

As of November, the majority of network managers still weren't making any plans for VOIP in the next 12 months, IDC found in a survey of 400 WAN managers. Yet while 50% dismissed the notion of launching voice/data integration projects anytime soon, 43% said they expect to be integrating the two over network backbone or access lines this year.

Then there's the Gartner view, which sees a great migration to VOIP in the 2003-2005 time frame. But the analyst firm hedges its prediction with cautions about security weaknesses, incompatible vendor offerings and other technical limitations.

Still, the Gartner folks are pushing enterprises to plan for a networking future that can readily handle new IP-based applications.

Widespread deployment of VOIP is as inevitable as the IP networks underneath it. So you'll need to keep a close watch on it. Not just because it's a cool emerging technology, but because it's emerging as a cost-effective way to deliver what the VOIP vanguard will be enjoying: a competitive advantage. ▶



PIMM FOX

IT Creates Customized Information

IN AN AGE when we are taught that as consumers we can have it *our* way, why can't we have information customized to the specific products and services we purchase? Why is the owner's manual for my car the same no matter what options I buy? With marketing mantras about one-to-one customer relationships and mass customization, IT is the only way to offer information tailored to each product and customer.

PIMM FOX is *Computerworld*'s West Coast bureau chief. Contact him at pimm_fox@computerworld.com.

Here's how.

Use XML as a standard to structure data depending on who will use the information and what format they desire the information to be in. For example, Caterpillar customizes owner's manuals for its construction and mining equipment using XML to reflect specific customer options. The manual is tailored for each product.

Boeing takes aircraft service manual data, enters it into an XML format and then applies rules and constraints that travel with the manual and the specific airplane through its entire life cycle. A particular segment of a manual might require that safety warnings be displayed next to specific drawings no matter which publishing format is used by the customer.

XML — which grants almost unlimited granularity for segmenting information — offers users a standard way to structure information on a large scale, cutting the cost of custom publishing. How else to manipulate 250,000 pages of owner documentation for a commercial jetliner or 1.5 million pages associated with a military fighter?

But massaging the relevant data that companies have about their products

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into a final format still depends on customer preference: Do they desire a CD-ROM, a bound paper manual or a Web site?

Each is possible, but until the advent of XML-based software from companies such as Arbortext Inc. in Ann Arbor, Mich., and Adobe Systems Inc., it was inconvenient and prohibitively expensive to publish to multiple media.

Oddly, the XML approach has created a whole new job classification that's bound to grow beyond simple coding. The skills needed to structure valuable information are so unstructured themselves that few people in the U.S. possess this experience (some estimates say fewer than 1,000).

Those with exclusively XML skills are giving way to those with backgrounds in library science and computational linguistics. These individuals are in high demand and are variously called information developers and designers. They combine an understanding of what IT makes possible, a comprehensive awareness of customer requirements and a familiarity with the actual information contained in the volumes of service manuals. Using XML, they can help companies turn the mundane into something valuable and personal. ◗

MICHAEL GARTENBERG

Treo Merges The Best of Three Worlds

FOR SEVERAL weeks recently, as part of my ongoing research into ubiquitous computing, I've been working with a preproduction unit of a breakthrough product from Handspring that should be evaluated by IT managers who support mobile users.

The creators of the PalmPilot have gone back to the drawing board and created Treo, a nearly ideal mobile information device that truly delivers on the concept of ubiquitous computing.

The key to Treo is that it solves the problem of device integration in a way no other on the market matches, and it redefines the market for cell phones, PDAs and wireless information devices. For IT managers who must integrate and support such devices, deploying Treo could greatly reduce complexity while lowering support costs.

Treo merges a 16MB Palm OS-based organizer with a GSM cell phone in a package only slightly larger than a Motorola StarTac phone. By incorporating a BlackBerry-style keypad and supporting General Packet Radio Services (GPRS) and "always-on" e-mail, Treo can remove the necessity of carrying a BlackBerry, a cell phone and a Palm organizer by providing a single device that offers the best features of all three.

MICHAEL GARTENBERG is research director for the Client Access and Technologies Group at Jupiter Media Metrix Inc. in New York. Contact him at **michael.gartenberg@mindspring.com.**

The result? A lower cost for device acquisition, support and synchronization. It also eliminates the additional monthly charges for separate wireless data devices such as BlackBerry units and pagers. In fact, lower acquisition costs and total cost of ownership will help justify the purchase of Treo.

Treo bucks the current trend by eschewing multimedia features; there's no movie-clip playback or MP3 audio support. Rather, it's targeted at business users, merging voice and data with personal information management functions.

Other devices have tried to integrate these functions, but they failed because they tried to add either telephony features to PDAs or organizer features to phones. Treo is the first device that has successfully merged both features in harmony, producing a sum that's greater than its parts.

Flip it open, and your speed-dial list is ready to be used. Tap a few keys and instantly find the contact you wish to call. Another tap brings up familiar Palm applications and includes an e-mail client, Handspring's Blazer Web browser and a Short Messaging Service paging application. Since most organizations already support the Palm standard, Treo fits nicely into existing IT architectures.

Is this device perfect? Not yet. The GPRS and always-on e-mail functions aren't there but will be via a software upgrade in the middle of this year. Today, you need an Internet service provider connection or remote office dial-up to connect and download e-mail and surf the Web. (As Handspring upgrades the software to support these features over the next few months, I'll report on how well they actually work.) Also, a color version won't be available until sometime over the summer. But even with these shortcomings, Treo breaks new ground in device integration and functionality and solves key integration issues.

Rarely does a device comes along that redefines a market and creates something brand new and innovative. The original Macintosh and PalmPilot were like that, and Treo is in this category. If your users are asking for or are now simultaneously carrying Palms, BlackBerry pagers and cell phones, consider lightening their load — and your support and device costs — with a Treo. ◗

READERS' LETTERS

Wanted: Chief Ethicist

THE LETTER from Paul Rich [Jan. 7] misses the point in several respects. First, the opinion of Microsoft expressed in Dan Gillmor's column, accurate or not, is widely held among the general public and by many IT managers. This is why opposition to Microsoft's business practices has come not only from Microsoft's competitors, but also from the Department of Justice and several state attorneys general. Second, I doubt corporate jealousy is a sufficient explanation for the rise in anti-Microsoft sentiment reflected in several national publications, including this one. Also, while all businesses need to have a sufficient regard for profitability, the profit motive should not be king at any company, including Microsoft. There is an ethical boundary beyond which companies should not trespass in search of profits. A chemical company, for example, may sell its products at fair market value, but it shouldn't dump toxic wastes into the public water supply to increase stockholder value. Perhaps if companies employed a corporate ethicist, they could spend less money on lawyers and public relations people.

Larry Burns
Database consultant
Renton, Wash.

Microsoft's Real Motive

I THINK Nicholas Petreley may be missing the point as to why Microsoft hasn't fixed fast user switching in Windows XP ["Fast Double-Talking," Technology Opinion, Jan. 14].

Sure, it would have involved a little more work to include true multiuser computing in XP. It might have even caused a delay of six to 12 months. But why delay issuing a new operating system when you can issue a half-completed one, charge for a full upgrade, then issue another "new" operating system at the full upgrade price that includes this feature when it's completed six to 12 months later? Microsoft gets two upgrade cycles by issuing only half of a feature at a time. This actually fits in with its schedule of issuing a new operating system every two years.

Brad Ong
Computer engineer
Pearl Harbor, Hawaii

A Familiar Rant

I'M HAVING a hard time understanding why Nicholas Petreley gets three-quarters of a page to babble about Windows XP and fast user switching. How useless. If I wanted to read boring techno-babble about an extremely minor Microsoft feature that 99.9% of networked computer users will never use, I would subscribe to *InfoWorld*. Didn't they use to have some guy ranting about how great it is to live in the Linux world and how it would soon eliminate the corporate desktop from the grasp of big, bad Microsoft?

Will the next Petreley column be about the ever-troubling process of pressing CTRL-ALT-DEL, which technically befuddled computer users must somehow manage to solve before logging in to a Windows computer? I bet that's easier on Linux too. I heard the other day that plugging a parallel cable into the back of a computer is much easier if the operating system is Linux. Better get Nick right on top of that breaking story.

Kirk Lashbrook
IT director
Troy, Mich.

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BUSINESS

THIS WEEK

EARNINGS PRESSURE

When publicly held companies must meet quarterly earnings targets, IT managers often face pressure from above to cut back on the number of people, modules or dollars devoted to long-term efforts. Here's some advice from IT practitioners on how to avoid getting projects curtailed. **PAGE 26**

ANNE HAMERSKY

PARTY WITH A PURPOSE

The increase in corporate layoffs across the U.S. is leading a growing number of displaced IT professionals to check out pink slip parties. IT hiring experts say the parties are great places to network and develop leads — but don't go to one of these events expecting to walk away with a job offer. **PAGE 32**

RIPE FOR THE PICKING

There's no better time to land a plum deal on enterprise software such as ERP and CRM packages — so long as you do your homework and develop an understanding of the vendor's needs. **PAGE 34**

CAREER ADVISER

Fran Quittel offers tips to a multilingual IS director in Spain who doesn't have an updated résumé and counsels a high school computer teacher with Java, Visual C++ and Visual Basic experience who feels he's underpaid. **PAGE 37**

JOE AUER/DRIVING THE DEAL

A Fair Audit Clause

IT'S PRETTY MUCH STANDARD PROCEDURE for astute software suppliers to insist on audit provisions in their software license agreements. The purpose, of course, is to help the supplier protect its intellectual property — the software you license. Still, while you understand their motivation, you need to negotiate forcefully to ensure that the suppliers don't impose onerous audit conditions that can allow them to unreasonably profit from or penalize you.

In other words, don't allow a licensor to use its rights to take advantage of you.

Here's a reasonable expectation: The software licensor should be allowed to periodically verify that you're using the software within the scope of the license and the number of copies authorized. You have an obligation to pay the supplier for your actual usage if you're using more software than your license allows. (Of course, the software licensors don't reduce your charges if you're using less than what the license allows.) But many software licensors want more than what they should be entitled. Does this surprise you?

Here's an example of particularly aggressive language in a supplier's software license agreement:

"With or without prior written notice, supplier may audit licensee's use of the software to ensure that licensee is in compliance with the terms of this agreement. If an audit reveals the licensee has underpaid fees to supplier, licensee shall be invoiced for such underpaid fees based upon supplier's price list in effect at the time the audit is completed. Licensee shall pay supplier an additional fee of 25% of the applicable unpaid fee disclosed by the audit. If the underpaid fees exceed 5% of the license fees previously paid by licensee, then licensee shall also pay supplier's reasonable cost of conducting the audit."

That should certainly get your attention — hopefully before you sign the contract.

The example above raises three issues that need attention:

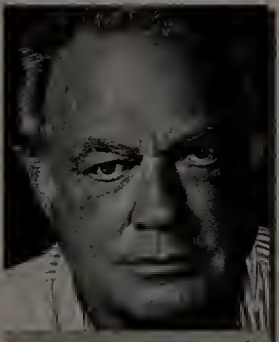
- The pricing for additional licenses.
- The additional 25% uplift fee, over and above the license fee.
- Who pays for the audit?

It's OK to agree to the notion that the licensor has a unilateral right to audit — as long as it notifies the licensee in advance. However, assuming that you haven't attempted — with malicious intent — to defraud the licensor, you shouldn't be subjected to onerous fees or forced to give away previously negotiated pricing concessions, regardless of the audit outcome. Establishing conceptual agreement at this level will go a long way toward developing a reasonably balanced audit provision.

Here's a conceptual audit statement that has been successfully used as a precursor to detailed contractual language:

"Licensor shall have the right, with reasonable notice to licensee, to audit licensee's use of the software no more than once each calendar year to assure compliance with the terms of the license agreement."

Once such a high-level understanding is established, the details concerning additional fees and costs can be addressed. Be careful not to give away any favorable pricing you previously negotiated. In other words, the license fee you pay for any "underlicensing" should be in accordance with your established pricing schedule, not at the prevailing license pricing at the time of the audit. Also, any uplift fee, such as the 25% in the earlier example, should be viewed as a penalty and deemed unacceptable by the licensee.



JOE AUER is president of International Computer Negotiations Inc. (*www.dobetterdeals.com*), a Winter Park, Fla., consultancy that educates users on high-tech procurement. ICN sponsors CAUCUS: The Association of High Tech Acquisition Professionals. Contact him at **joea@dobetterdeals.com.**

Unless there is flagrant software overuse or the audit uncovers a deliberate intent to defraud the licensor, the licensor should bear the cost of the audit. The audit is done at the licensor's request, and it's for the licensor's benefit.

Even if the audit reveals material overuse on the part of the licensee, such as use of 30% more than the number of copies authorized, most suppliers will agree to contract language that establishes parameters for sharing the cost of the audit, and the licensor would be entitled to out-of-pocket costs that exceed some established dollar threshold.

The bottom line: Be prepared to insert *reasonable* audit provisions in your software licenses. They'll save you a lot of aggravation — and money! ◗

Keeping IT Projects On Track

As publicly held companies struggle to meet quarterly earnings targets, IT executives are under increased pressure to ensure that business-enhancing projects aren't curtailed.

By Matt Hamblen

BELLE MELLOR

THERE'S A RELENTLESS in-your-face reality that IT managers have to address, especially at publicly traded companies. When the quarterly financial report is due, the pressure from top brass to hit earnings-per-share targets becomes paramount.

This can force IT shops, which are still considered cost centers at some businesses, to defer a big purchase that's part of a strategic business initiative, such as installing *x* number of modules for an enterprise resource planning (ERP) effort that's already under way. Or to push back the hiring of project managers and developers for a big customer relationship management (CRM) project to the next quarter.

Since publicly held companies are constantly having to do the numbers dance with Wall Street investors and shareholders, here are some tips to help IT managers keep long-term projects on track.

The key to overcoming the quarterly earnings predicament, say IT and business managers, is to develop measurable goals for IT projects that are tied to solid business-side returns. Enterprises need to make a commitment to finding a return on investment with an agreed-upon methodology that includes regular updates or face-to-face meetings among senior-level team members.

Also, IT managers must work more closely with business managers and learn how to communicate about project goals and milestones in non-technical terms.

"CIOs always need the awareness of the total performance of the corporation in everything they do," says Ron Ponder, former CIO at Sprint Corp. and AT&T Corp.

Many of the experts' basic recommendations appear to be in place at Owens Corning in Toledo, Ohio, which announced a Chapter 11 reorganization plan in April.

"The biggest way we deal with quarterly pressures is to deliver on what we say we'll deliver on," says David Johns, Owens Corning's chief supply chain and IT officer. Supply chain and IT functions were combined during the firm's reorganization, which has "been a great combination" and has resulted in a $32 million productivity savings in the first year alone, representing about 5% of the firm's total costs, says Johns.

Among the other steps it took,

Owens Corning conducted upfront benefits analysis for a multimillion-dollar advanced process control project implemented in early 2001 that is being expanded to more than 20 manufacturing plants globally. The project is monitored with quarterly meetings of the executive technology committee, a five-member group that reports to the CEO.

In one scenario, the advanced process control effort examines the optimal use of asphalt in the production of roofing shingles to ensure that asphalt isn't being wasted.

Quarterly meetings with business and IT "initially included a lot of pushing back and forth, but now they go well, and we make sure we are aligned with business partners inside Owens," Johns says.

By comparison, without the high-level business and IT sharing process, an ERP implementation started in 1995 at Owens Corning "didn't do as good a job at defining goals as we would today. What we have found is that the data and business justification has got to be there," says Johns.

The ERP project, which involved installing SAP software across different business units, encountered similar problems that corporations run into when they treat ERP as a tech project but don't look at the organization as a whole, says Johns. At Owens Corning, "we didn't approach training properly," he says, but by 2001, the company had learned its lessons and now has a good ERP implementation.

BRINGING ROI TO LIGHT

Keeping IT projects alive is always tough due to earnings-per-share pressure, "but it's especially a problem when economic times are tough as we're now experiencing," says Mehrdad Laghaeian, CIO at Osram Sylvania Inc., a lighting products maker in Danvers, Mass.

After 20 years of working in IT at several companies, Laghaeian has learned that "if IT is not considered a strategic tool for the business then the [quarterly earnings] problem is much more pronounced." For instance, if an IT manager considers adopting the latest desktop operating system with hundreds of machines but can't tie the investment to anything that will improve the business, the request will — and should — die, he says.

When Osram Sylvania began a multimillion-dollar CRM project three years ago, the effort was planned by a team of 14 senior business and IT managers. The project went live in October 2000, after the business side adopted ROI factors, including reduced head counts in IT and savings on transaction costs, Laghaeian says.

He believes the CRM project might have flown in the current down economy because of the business-side involvement. By contrast, a storage-area network (SAN) project might seem purely an IT project today, without a clear business driver. Says Laghaeian, "I'd have to say, 'What is the justification for a multimillion [-dollar] SAN system?' "

At some companies, IT projects with long-term priorities typically receive strong business backing.

For example, at United Parcel Service Inc. in Atlanta, which spends about $1 billion per year on technology, each IT proposal must be judged by the business value it will net, says David Salzman, wireless project manager at UPS. Regardless of the economic downturn and its impact on corporate earnings, UPS continues to have "very strong development" of IT projects, which are approved by business unit managers who push decisions down.

IT projects at UPS have been aided by an awakening experienced by senior management several years ago: Rather than viewing itself simply as a package deliverer, UPS has expanded its purview into the logistics and information business, according to Salzman.

Consultant Tom Mangan at Andersen Business Consulting in Atlanta says it's key for CIOs to use "political skills" to get business managers to put the financial business benefits of an IT project within the business operations plan. This way, the IT project is credited with the return and not some other factor in the organization.

Mark Segher, director of e-commerce at American Medical Security Group Inc. in Green Bay, Wis., says the way to keep an IT project alive through quarterly pressures is to convince senior management that it has business value. That can include developing a payback model for several months instead of several years, or putting in place steppingstones with definable ROI targets each quarter for a long-term initiative, as Segher has tried to do with a business portal created last year that is used by 20,000 insurance agents.

Robert O. Graham, chief technology officer at Infocrossing Inc., an outsourcing and co-location provider in Leonia, N.J., says he recently built a Web portal with multiple functions for his firm. To meet quarterly requirements, he staged its growth. The project started several years ago with skeletal functions, with subsequent rollouts of other features.

Another tactic Graham used to achieve buy-in was to show business managers various phases of the portal in their working state just before they rolled out. To help balance costs when money gets tight, Graham has also resorted to disposing of consulting resources for a quarter or longer.

Still, he acknowledges that it's "not easy to quickly knock off a development effort." ◗

Earnings Strategies To Ponder

RON PONDER, former CIO at Sprint and AT&T, now advises other corporations on expedient IT practices as CEO of Telecom Media Networks Americas in New York, a consulting subsidiary of Cap Gemini Ernst & Young. He offers four strategies for IT managers:

❶

Have a sound governance structure in place that helps the entire staff understand how the rules of IT project approval are made.

❷

IT managers must have a seat at the table, on a regular basis, with the primary business customers in the company, making sure the IT mission is aligned with the business units.

❸

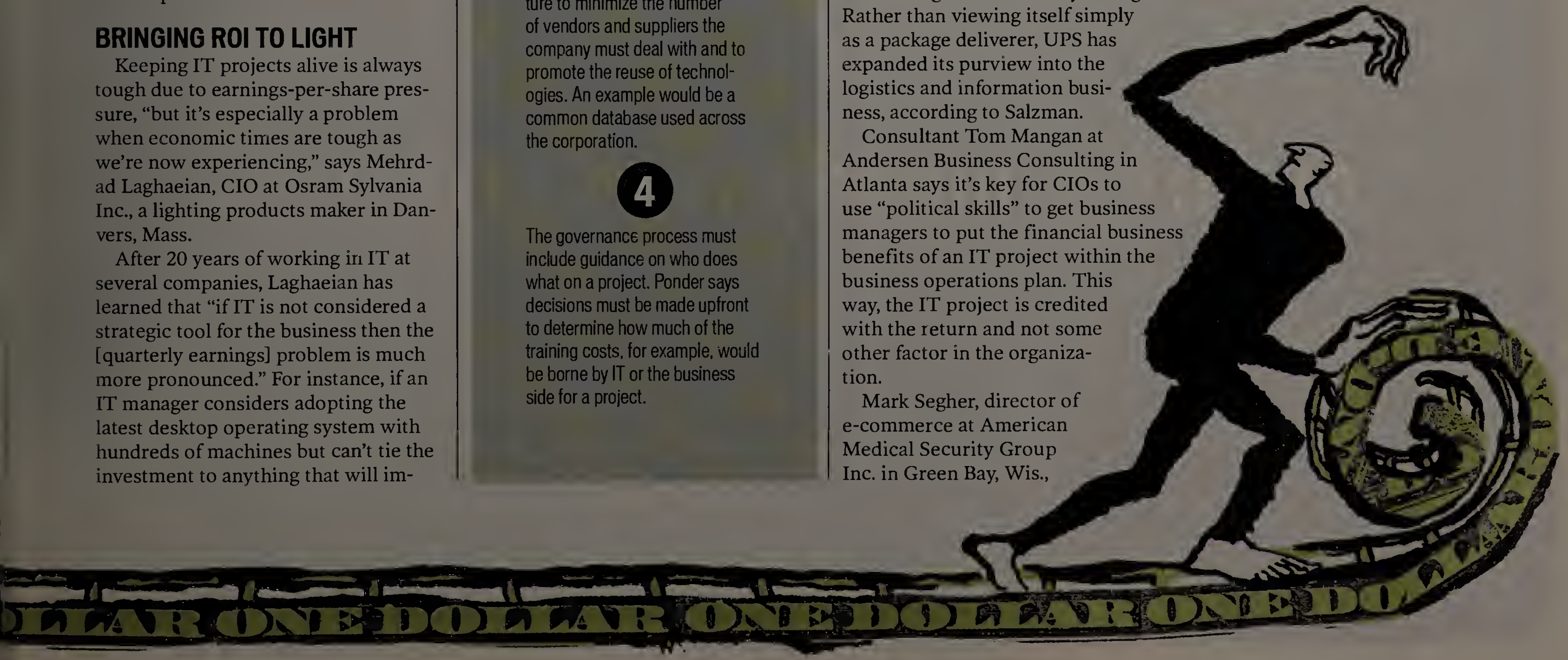
The IT group must establish a consistent technology architecture to minimize the number of vendors and suppliers the company must deal with and to promote the reuse of technologies. An example would be a common database used across the corporation.

❹

The governance process must include guidance on who does what on a project. Ponder says decisions must be made upfront to determine how much of the training costs, for example, would be borne by IT or the business side for a project.

Quick Link

Learn how American Medical Security Group developed its own rapid evaluation methodology for assessing new and existing technologies: **www.computerworld.com/q?26405**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SIX
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WORKS BETTER WHEN EVERYTHING WORKS TOGETHER™

SURVIVING T

For IT workers caught in the recent wave of layoffs, how you fare depends on skill, attitude, timing and luck. By Kathleen Melymuka

IT'S BEEN A TOUGH YEAR FOR 27-year-old Stephan Koledin.

On June 7, he was laid off from his software development job at The Motley Fool Inc. in Alexandria, Va. Since then, it's been a roller-coaster ride of shotgun Web searches, sure things gone bad, freelance work and unintriguing prospects. He was even rehired and then laid off again.

The result: a new outlook, hard-won wisdom and a new game plan.

Koledin is just one of the more than half a million IT workers who were laid off during the first 10 months of last year, according to Challenger, Gray & Christmas Inc., an outplacement firm in Chicago. The number of IT professionals looking for work on Dice.com, the oldest and most heavily used IT job board on the Web, has increased 50% over 2000, says Scot Melland, CEO of Dice Inc. in New York.

IT HIRING 2002

The regions most heavily affected have been the strong technology centers, including the San Francisco Bay area, Boston, New York and Austin, Texas. The hardest-hit IT areas have been consumer or front-end technologies such as Web development.

"The demise of the dot-coms took away a lot of those jobs," Melland says.

That's what happened at Motley Fool, where Koledin was caught in the second of several rounds of layoffs last year. "Certainly, I was a little disappointed, but also kind of relieved," he says. "Things had been going downhill, and it gets depressing working in an empty building with all the empty desks."

Being laid off taught him to be more skeptical about the business side of a company, he says, explaining, "Financials are not always as good as they appear."

Koledin had a reasonable severance package to fall back on. More important, he had prospects. The day of the layoff, a manager passed him a tip on a start-up hardware maker interested in hiring him.

Koledin contacted the start-up, liked what he heard and began discussions about the work and the salary. "It looked like a done deal," he says. But a month later, without warning, the start-up stopped returning his calls, and that was that. "It was very strange," he says.

Having inadvertently wasted a month, Koledin began a blanket search of postings on all the big Internet job boards. He says he got offers from federal contractors but wasn't inspired by the jobs. In the Washington area, Koledin says, "there certainly is work if you're not too fussy. But you end up doing the same projects you did before but for different companies."

Nor did Koledin find anything interesting enough for him to relocate. By early August, he was doing some independent contracting to pay the rent when he got an invitation from Motley Fool to come back as a full-time software developer. "It was great work; I was happy to do it," he says. "And I was running out of that money thing."

Koledin had no illusions about longevity. "I saw this as a way to stall, at least through the winter, while looking for something else," he says. But that wasn't to be. He hadn't been on the job a month when another layoff was announced.

This time, there was no shock, he says. A co-worker compared the news to stepping on gum on the sidewalk: "It's just kind of annoying, but no one's too emotionally upset," he explains.

Koledin has decided to move back to his hometown, Pittsburgh. He's been networking with people and groups such as the local technology council and chamber of commerce. He's investigating what kind of work companies are doing, where they're expanding and whether they can use his skills. He's approaching Pittsburgh employers through job postings that may not

STAN BAROUH

STEPHAN KOLEDIN, who was laid off from Motley Fool twice last year, says, "I was . . . kind of relieved. Things had been going downhill, and it gets depressing working in an empty building with all the empty desks."

Tips for IT Job Hunters

- Stay positive.
- Use a layoff as an opportunity to think about what you really want to pursue.
- Don't think too long. Get moving.
- Never stop networking.
- If your skills aren't current, make them so; then keep them so.
- Don't use a shotgun approach; research companies and focus on a few that look promising.
- Don't limit yourself to high-tech companies; there are more IT opportunities at non-IT companies.
- Be sure your target companies are financially sound.
- Don't count on one possibility; keep a couple irons in the fire.
- Don't be vague; sell proven skills and specific experience.
- Tie your résumé to back-end, money-saving projects, not pie-in-the-sky dot-com ventures.

Silver Linings

"The good news is that even with the tech slowdown and layoffs, there is still a lot of demand for tech professionals," says Scot Melland, CEO of Dice, an online technical job board. "There are more than 40,000 job opportunities on our site alone."

The most popular job titles on Dice.com include software engineer, applications programmer and business analyst. Specialties that remain strong are back-end, money-saving areas like networking, database administration and help desk work. Ironically, the geographic regions with the most jobs to offer are those experiencing the most layoffs: technology centers such as Silicon Valley, New York and Boston.

But Melland stresses that 80% to 90% of IT positions are actually found in non-IT companies. "Demand is still strong in the tech departments of major corporations, with a back-end, back-office focus," he says, "Companies are looking for experience and proven skill sets. The best way to portray yourself is based on experience in specific project areas."

Melland predicts that IT projects now on hold will move forward once there's less business uncertainty. "At that point, we'll see demand going up pretty quickly," he says. "But I would expect to see more demand for contractors on the front end. Companies will pull in contractors before they'll pull in full-timers."

– Kathleen Melymuka

even be a good fit, just to get some face time with people inside.

Koledin is convinced that his original big-net approach was a mistake. "Just hitting the job-search engines and headhunters isn't really geared toward getting a job you want," he says, adding that targeting specific employers seems to be working better. When last seen, he was headed to Pittsburgh for an interview.

"Instead of fishing in a lake, it's a tank," Koledin says. "There may be only three fish in the tank, but I think there's a much better chance of catching something good."

Sleepless in Seattle

In Seattle, Marguerite Payne, fifty-something years old, is getting really discouraged. "I've been through three of these [layoffs] over the last three years," she says.

Her last job was as a program manager at License Online Inc. in Bellevue, Wash. The company configured and sold licenses for Microsoft Corp.'s products through the Web, but she says her job wasn't very technical. Last fall, her position was merged with one that required more technical skills, and she was out.

"I was really worried," she says. "And all my worst fears came true."

Payne called recruiters she knew from hiring employees at License Online. She used the Internet, alumni associations, state of Washington resources and references from friends. "I have a database of more than 3,000 contacts," she says.

She tried to backdoor her way in, applying for jobs that didn't really interest her with the hope of selling herself through the process. No dice.

Once, Payne was told that she "didn't appear to have sufficient energy." Another time she was "not a cultural fit." One interviewer said the job had been filled, only to repost the opening later. There were even interview appointments where no one showed up to talk with her.

"I can't figure out whether these people are rude, obnoxious, stupid, incompetent or all of the above," Payne says. "And it's not that I don't have the skills; I do!"

The trouble is that her skills aren't an exact fit with the skills companies want. "People are just not able to see how my skills are transferable," she says. "Today, it seems to require an exact match to be looked at for the job. A lot of talent and skill is being wasted."

Payne is convinced her age is the key to her problems. "One of the saddest things going on right now is the total discrimination against older workers," she says.

Even so, networking finally paid off. Thanks to the referral of a friend, Payne started work in July as a contractor at Microsoft, working on its next-generation contact center. But the respite is tentative. "It's day-to-day and could be eliminated anytime," she says. If that happens, Payne will go back to her network. "Skill, ability and knowledge have nothing to do with whether you get a job," she says. "It has to do with who you know."

Soul Searching

For Richard Wren, 57, being laid off was an opportunity to take stock.

Wren was an IT manager at Aspect Communications Corp. in San Jose, working mostly from his home in Boulder, Colo., when a company restructuring left him and most of his colleagues out of work last May.

The instant lesson learned, Wren says, was "if you're a tech person and want to continue to be, the key is to be closer to the real work, not just management."

Since Wren had done environmental work years before and had continued to be involved as a volunteer, he decided it was time to try to integrate his professional skills with his avocational passion.

"I've reached the junction where I'd like to have something that will allow me to do things into my 60s and 70s that have some salary attached but are rewarding," Wren says.

Toward that end, he's expanding his volunteer activities with organizations such as Boulder County Parks and Open Space, and he's getting plugged into national organizations such as The Nature Conservancy that might have long-term, paid positions requiring both technical and naturalist skills.

"I'm really trying to fuse those together," Wren says. "There seem to be opportunities in the large organizations. They're frequently looking for people — but not for $100,000-a-year jobs."

That's OK, because at this point, satisfaction is more important than a huge paycheck, he says. Meanwhile, he's also attempting to supplement his income by applying for grants to fund environmental fieldwork studies. "Five thousand [dollars] here, $10,000 there — it adds up," Wren says.

Looking back to May, Wren says he wishes he had gotten serious a little more quickly, because some organizations that were hiring earlier have freezes on now. But he's not worried. "I figure out of all of this, some good thing will happen," he says. ◗

HE PINK SLIP

GOT YOUR PINK SLIP? GO PARTY!

With layoffs on the rise, IT pros are increasingly on the prowl for pink slip parties. They're a great place to network with your peers and check out the job climate, but don't arrive expecting to walk out with a job offer. By Fran Quittel

When Sharon Luciw was laid off last year from her high-level IT job, she figured she'd have no trouble finding new work, despite the tighter job market.

After all, Luciw had been director of IT at the Mountain View, Calif., office of InfoSpace Inc. and had more than 15 years of experience in systems administration, customer support and operations. And with six years of experience as a manager, Luciw felt she would be a candidate in high demand.

But she quickly realized last summer that interviews were slower in coming than she had anticipated. The employment market was worse than she had realized, and getting another job would likely take longer than she had originally presumed.

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In addition to using traditional methods to find a new job — newspapers, online job postings, peer contacts — Luciw decided that attending a pink slip party organized by the Silicon Valley chapter of the Commonwealth Club of California seemed like a worthwhile bet.

"I realized that I was a senior IT manager and the party would probably not produce any direct leads at my level," says Luciw. "But this event offered coaching and had some panelists in industries I had thought about exploring."

Chaired by Marty Nemko, a veteran career counselor in Oakland, Calif., the Commonwealth Club Pink Slip Party in Palo Alto, Calif., was a gathering place for some 500 IT workers in search of new employment opportunities, hopefully within the Silicon Valley high-tech Mecca they had just exited.

Unlike Luciw, many pink slip partygoers say they show up hoping to find specific leads to new jobs. Luciw took advantage of the event to feel out the job climate — what employers were looking for, what technology and business skills were in high demand and where employment might be most secure. The input helped her eventually land a new post at Foothill College in Los Altos Hills, Calif., in October.

Realistic Expectations

The event Luciw attended provides a perfect example of why job seekers shouldn't expect that attending a pink slip party will lead to an immediate invitation to a new job. Only one contract agency, several authors and no employers attended the Commonwealth Club's gathering, in sharp contrast to typical employer-supported job fairs.

The event's agenda included realistic advice and practice sessions regarding each job seeker's campaign to find new work. There was also input regarding IT jobs in non-high-tech industries from panelists John Epperheimer, president of Santa Clara, Calif.-based Workpath Group and a *San Jose Mercury News* columnist; Betsy Williams, chief operating officer at Stanford Hospitals & Clinics in Stanford, Calif.; and John Shannon, manager of human resources and employer services for the San Jose Unified School District.

"I came hoping to find companies where I could interview," said one disappointed out-of-work professional, a former manager at a dot-com firm. But he said he still benefited from the evening because he learned how to focus his verbal presentation on a few specific skills and areas of expertise instead of meandering through his entire résumé if asked to discuss his experience, qualifications and current job search objective.

Indeed, events such as pink slip parties serve a purpose that's just as important as providing job leads: They can help the recently unemployed brush up on their job search skills and plan more effective strategies.

"People need to understand that job hunting requires consistency," Nemko explains. "This means working on 50 leads, replying to 50 ads, developing 50 personal contacts — and keeping this all going until you find new work."

Nemko says many people tend to burn out when they begin their job hunt on fast-forward and don't realize that their search efforts might require weeks or perhaps months of daily drudging. According to Nemko, a job search requires three hours a day if you're working and six hours a day if you're unemployed.

"Most people fool themselves," says Nemko. "They think they are working at finding new work, when they are really not spending the time."

Recognizing Alternatives

Too many IT professionals also give up if they don't find positions exactly like the ones they've held before. But events such as pink slip parties can introduce job candidates to opportunities they may not have considered.

In Silicon Valley, for example, when most people think of technology jobs, they think of high-tech companies. Many attendees at the Commonwealth Club party were surprised at the wealth of opportunities in industries that they hadn't thought to explore before.

Recruiters at the San Jose Unified School District, for example, have taken advantage of the weak technology market to lure out-of-work IT professionals into the school district for both teaching and IT openings.

"We have apartment rental assistance and also offer teachers a $40,000 interest-free loan to help first-time buyers purchase a house," said Shannon, who also noted the ubiquitous use of Internet technology throughout the district for both teaching and administrative tasks.

But not all IT workers are flexible about the industry or region in which they're willing to work.

"I don't want to move," said a Unix systems administrator upon hearing about an opening in Monterey, Calif., that would have required him to relocate from Palo Alto.

And one out-of-work Web site developer who was clearly hoping for a return to the good old days said he was nervous about his short-term prospects.

"I came here from Philadelphia and had a wonderful time working with a consulting company that helped clients design their e-commerce Web sites. I don't want to leave," he moaned, but he acknowledged that he might not have a choice.

The employment market will remain really tight in 2002, so IT job seekers need to explore new avenues to job leads and advice. Events such as pink slip parties may not lead to an immediate interview, but if you need help targeting your résumé, want to find opportunities outside of technology companies or are having trouble presenting yourself, these events can be a very good use of your time. ◗

Quittel is Computerworld*'s Career Adviser columnist and a staffing expert in Emeryville, Calif.*

Quick Link For a checklist of things to remember to do while looking for a job, visit our Web site: **www.computerworld.com/q?26413**

ANNE HAMERSKY

PARTYGOERS Robbie Motter, Jan Wingad and Rosalie Gonzales (top) take advantage of free materials that offer job hunt tips. At left, Roger Smith gets career advice from Mary Ann Rafferty, and at right, Eric Savitz discusses job market strategies with Claud Force and Bruce Grimes.

Words to The Wise

When trying to get yourself re-employed, don't be overly fussy. It can take weeks to get into a new position and even longer to get into a new job you really want. As a result, keep the following in mind as you begin, and continue, your search.

❶ Don't refuse a job because it doesn't pay as much as you want. Look at it as a steppingstone to a better position.

❷ Network relentlessly. Personal contacts are how people find positions in the current job market.

❸ Research newspapers and check out a prospective employer's Web site relentlessly, including on the day of your interview. Impress interviewers with your knowledge of their company, its business and its systems.

❹ Research each person who will interview you for a potential job. Look for internal contacts at the company who may know you and can put in a good word for you during the screening process.

It's a Buyer's Market for Software Deals

Conditions are favorable for winning concessions when negotiating licensing agreements for ERP and other enterprise packages – as long as you do your homework and know your adversary. By Marc L. Songini

THERE'S A BRIGHT SPOT in the current economic gloom: It's the best time to wheel and deal on enterprise resource planning (ERP), customer relationship management and other types of enterprise software applications.

Corporate IT buyers are in a "position of strength" to negotiate, since even financially healthy vendors are "feeling the pinch of the down economy," says Karen Peterson, an analyst at Stamford, Conn.-based Gartner Inc. Moreover, IT procurement managers should try to consolidate licenses and buy only as much software as their organizations will need for the coming year, she adds.

Budget-conscious IT purchasing specialists and analysts offer a variety of suggestions for getting discounts or favorable conditions for long-term software contracts. For instance, savvy managers already know that it's best to haggle with a salesperson when he's pressed to meet a monthly or annual quota. Purchasing in volume is another advantage, and it's always wise to do your homework and know your vendor (see box below).

Beyond the licenses themselves, there's the possibility of getting the vendor to commit to extra perks. For example, the vendor might help you identify potential opportunities for supply chain and other efficiency improvements.

"I try to fully understand the pricing methodology of the vendor," says Jim Prevo, CIO at Green Mountain Coffee Roasters Inc. in Waterbury, Vt. "Vendors are often looking for early adopters, reference customers and customers who purchase a broad array of software all at once. These can be factors in negotiating the final pricing."

Prevo was able to gain some significant concessions on an ERP deal by becoming an early adopter and purchasing multiple modules of the package. The result: Green Mountain ended up paying about half of what it would have for all the modules individually and negotiating a price cap on the support costs for three years, says Prevo.

Key Negotiations

Indeed, IT managers should make a point of negotiating annual maintenance fees — not just licensing costs — and try to get a reasonable pricing cap on them, Prevo suggests. "It doesn't do much good to get a steep discount on the license price only to find that the annual maintenance/support fee is 20% of the full list price," he says.

According to one information architect whose manufacturing firm runs an Oracle database, corporate IT buyers should "read, read over and reread anything to do with the licensing so you understand what you're buying." This New York-based manufacturing firm was able to get more favorable terms on a costly gateway it was buying by researching the competition, finding a cheaper product and telling the initial salesperson it was going to cancel the incipient deal. The salesperson responded by coming back with better terms that saved the manufacturer $75,000.

From a technical standpoint, "being able to walk away from a deal isn't always possible," says the information architect. But in this case, it was a viable option.

Timing can also be key to getting the best bang for the buck. Katherine Jones, an analyst at Boston-based consultancy Aberdeen Group Inc., is blunt with her advice: "Get the sales critter at the end of the quarter. . . . Find a rep who hasn't met his or her quota, and they discount like crazy. All companies want their quarter to look good." ▶

Enterprising Approaches

When looking for a good deal on enterprise software applications, IT procurement specialists and analysts offer the following recommendations:

- **Understand how your vendor arrives at its pricing.**
- **Study the terms of your contracts closely.**
- **Negotiate the cost of maintenance as well as the software license.**
- **Try to haggle toward the end of a quarter or a year, when vendors are typically trying to hit their quotas.**
- **Try to slash prices by consolidating software buys or becoming a test or reference site.**

State Fare

IT pros for the state of California stand by consolidated database buy, despite allegations that they violated legislative procedure.

One way of saving money when buying software is by pooling many small departmental purchases together and exploiting bulk discounts.

By applying this principle, administrators for the state of California arranged to consolidate a database purchase from Oracle Corp. last summer. The move, part of a program dubbed Enterprise License Agreements, also triggered a small storm of controversy among legislators.

By giving Oracle a sole-source contract worth $126 million, the administrators believed the state would save an estimated $110 million in database and maintenance costs over the next decade.

"Since the state already purchases so much Oracle, but departments do it individually, the idea was pretty common-sensical," particularly given the current business climate, says Arun Baheti, California's director of e-government. "Oracle and other vendors seem very interested in trying to secure contracts, and I think that the scale of government makes enterprise agreements a good option."

However, the California agencies that were involved – the Department of General Services (DGS) and the Department of Information Technology – came under fire from legislators for violating procedure. Lawmakers claimed that the DGS was bound to notify them of any purchase made for more than $500,000.

Nevertheless, the department is sticking to its guns.

"The criticism of California's first major endeavor with Enterprise License Agreements has been largely over process and is currently the subject of an inquiry by the state auditor," says DGS spokesman Robb Deignan. "Pending the outcome of the audit, it remains the department's belief that this agreement for essential products and services will save California taxpayers millions of dollars over the life of the contract."

– Marc L. Songini

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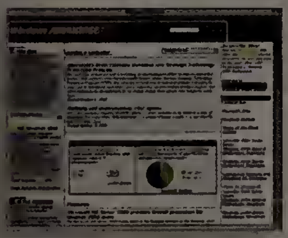

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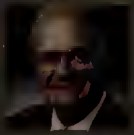
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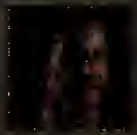
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— PROFILE ONLY

Dear Profile:

The job market has changed considerably from four years ago, when you began your current job and worked your way up. Now, as someone without a degree who is based overseas and has only a "profile" rather than a full résumé, you will have to spend time on three fronts: compiling an interesting, updated résumé; building personal contacts to create a platform from which to make a move; and figuring out how to compensate for your lack of a university degree.

FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at **www.computerworld.com/career_adviser.**

If you've never had to hustle for a job, says nationally syndicated career columnist Joyce Lain Kennedy and author of *Resumes for Dummies* (Hungry Minds Inc., April 2000), you need to know that you must have a core résumé so self-marketing information is available when you need it. You must sit down and do this exercise, rather than just use the résumé-building software that's available online.

"These programs generally play your experience out on the interviewer's terms, not yours," Kennedy cautions. So start looking at jobs you think you'd like. Then make a list of your skills and the skills needed to get the jobs you want, and build a bridge between the two.

You might also want to ask your clients: "Who might want to hire someone like me?" Finally, because this job market is credentials-oriented, list courses you've taken and figure out how to get that diploma.

Dear Career Adviser:

I'm a California high school computer science teacher with three years' experience teaching C++, Visual C++, Java and Visual Basic. Recently, I became a Sun Certified Java programmer. I also have a bachelor's degree in math. I feel underpaid as a teacher and am considering changing jobs to become a programmer/analyst.

— IS THIS REALISTIC?

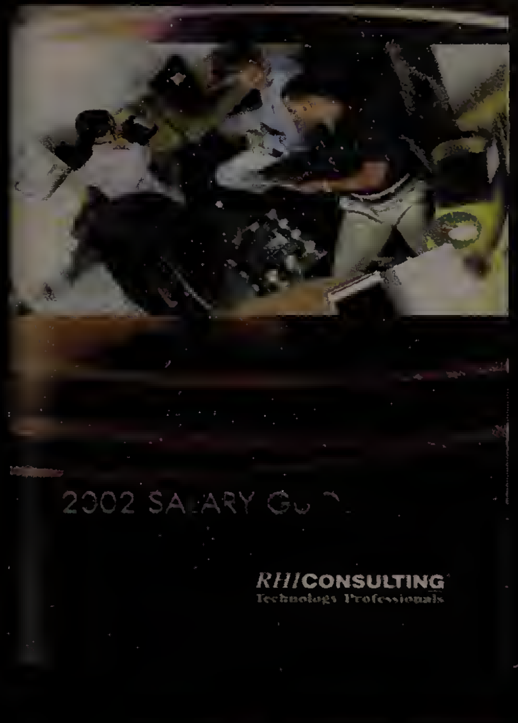
Dear Realistic:

It's certainly possible for you to move from the classroom to IT in education, says Warren Williams, president of California's Educational Data Processing Professionals Association (CEDPA) and assistant superintendent of IT services at Grossmont Union High School District in La Mesa, Calif.

Transitioning to an IT role within the same school district might be an excellent move. This would preserve your career and salary stability while giving you an opportunity to work with the new technologies education is embracing. These include wireless, the Web, e-commerce and firewalls.

Familiarize yourself with the administrative and academic aspects of educational IT. Read through the CEDPA's bimonthly "Databus" newsletter and participate in its various listservs, special interest groups and member meetings (*www.cedpa-k12.org*).

Then volunteer on school technology-planning projects within the districts you want to work in so the decision-makers get to know you. These transitional steps should help you make the move quite easily. ◗



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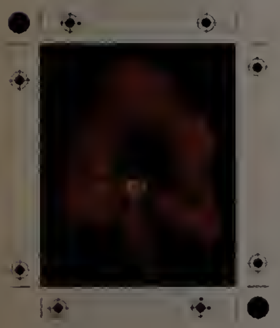
TECHNOLOGY

THIS WEEK

PLAN FOR SANs

Better interoperability gives IT more choices for SAN deployments, but the complexities of assembling a system mean careful planning is still required. **PAGE 42**

QUICKSTUDY



Color space is a model of all the possible colors that can be produced by a particular output device, such as a monitor, a color printer or a printing press. Learn more in this week's tutorial. **PAGE 40**

FUTURE WATCH

Highly decentralized, very complex systems are becoming the norm. No one can completely understand them, and the old rules no longer apply. Visionary Clay Shirky says we ought to pattern them after biological systems. **PAGE 41**

SECURITY JOURNAL

After the CIO inquires about a virus attack, security manager Mathias Thurman begins reviewing the corporate defense strategy. Despite efforts to lock out malicious code with desktop antivirus software, many doors have been left wide open. **PAGE 44**

EMERGING COMPANIES

Bocada Inc.'s software monitors backup data and storage server systems, determines whether data has been properly backed up and offers detailed reports on the potential causes of a backup failure. **PAGE 46**

NICHOLAS PETRELEY

Blame the Internet

ONE OF MY PREDICTIONS for this year was that the economy probably won't recover as soon as everyone hopes. I pinned the future of the economy on how well we wage war on terrorism. But there is a more subtle enemy of our economic recovery than terrorists: the next big thing.

People often blame our current economic woes on the fact that the dot-com bubble burst. I blame it on the fact that we created the dot-com bubble. We blew the Internet revolution way out of proportion because we expected it to produce the same kind of robust economic boom we enjoyed with the PC revolution.

Many people who are disappointed with the outcome of the Internet revolution are hoping that wireless devices will be the next big thing to revive the tech sector and turn the economy around. Not me. If wireless technologies send the tech market back to the dizzying heights it reached during the dot-com mania, it will only be because we've created another bubble to pop.

Outside of cell phones, isn't the point of a wireless device to make it more convenient to connect to the last big thing, the Internet money pit? If that isn't a delicious enough irony for you, consider that many wireless devices are likely to be based on the other last big thing that turned your 401(k) into chump change: Linux. So if you're hoping wireless will undo the damage that plummeting Internet and Linux stocks did to your portfolio, remember that wireless rides on the backs of those other technologies in order to be useful.

The most amusing thing about this situation is that the Internet really was the next big thing. It still is. Can you imagine doing business today without your Internet e-mail address? Without the Web as a resource for finding exactly the information you need? Do you realize that open source runs most of those services?

So if we were right, what went wrong? We never grasped the extent to which the Internet and open source would change the rules of our economy. I can think of no better illustration than a quote by the former president of Red Hat Linux, Bob Young. Long before most of you probably ever heard of Linux, Young openly stated that his primary goal in promoting Red Hat Linux was to turn Microsoft's $10 billion-per-year operating system business into a $10 million-per-year Linux operating system business. After hitting outrageous highs of about $150 per share, Red Hat stock sells for about $8 per share today because Bob's plan is succeeding, not because it failed.

The new Internet economy undermines the traditional means of making profits in the same way that free software undermines the Microsoft monolith, only more so.

The Internet manages to damage every existing industry imaginable, both directly and indirectly. You can research any topic without having to visit a library or pay for an encyclopedia, book or magazine. You can shop without a car or bus. You can converse without paying long-distance bills, visiting the post office or paying for stamps. So if the economy is sluggish, that tells me the reality of the Internet age is finally replacing the fantasy.

So what do you do? If your company's bottom line is hurt by the transition to this new economy, exploit the Internet to save costs. Don't fly your executives across country for a meeting; set up a teleconference. So what if the airlines suffer? We didn't avoid air travel to protect the railroad industry.

Systems are always overthrown in favor of others in any revolution. There are winners, losers and trade-offs. Jobs are lost, and people must retrain to remain employable; companies have to retool and adjust their spending patterns. Large, wealthy companies entrenched in their old habits may fight change, but they usually come around or fight to survive.

If you look at it that way, you'll see that the dot-com blowout signaled the beginning of the new Internet economy, not the end. The sooner we face that fact, the sooner we'll start changing our business culture to adapt and, in the end, learn to prosper based on a firm grasp of reality rather than the illusion of the next big thing. ◗

NICHOLAS PETRELEY is a computer consultant and author in Hayward, Calif. He can be reached at nicholas@petreley.com.

Color Space

DEFINITION

Color space is a way of referring to a model that represents all the possible colors that can be produced by a particular output device, such as a monitor, color printer, photographic film or printing press.

BY SAMI LAIS

IF YOU CROSS THE STREET with the light, check the sky before taking an umbrella, and add the right amount of cream to your coffee, you're making decisions based on information derived from your own personal color space.

Your eyes are delivering that information. They're impressive instruments, more sensitive to the infinite number of colors in the spectrum than photographic film is, but not as reliable. Film records those parts of the visible electromagnetic spectrum that are present, whereas the colors you see are influenced by cultural and individual expectations.

Also, your personal color model has no objective standard. Try to describe a color to another person and you realize how difficult it is to translate from your color space to his.

This ambiguity led the Vienna-based Commission Internationale de l'Eclairage (CIE) in 1931 to develop a color space based on data from colorimeters, instruments that can accurately measure specific wavelengths of light. Based on an 1857 model by James Maxwell, the CIE's color space uses the primary colors of transmitted light: red, green and blue (RGB). This prevalent model is additive: Add red, green and blue light and you get white.

A second dominant color space model uses reflected light. This subtractive model attains white by subtracting pigments that reflect cyan, magenta and yellow (CMY) light. Printing processes, the main subtractive users, add black to create the CMYK color space.

The CIE's XYZ (representing red, green and blue) color space measures two components of color — hue (the dominant wavelength, such as red or green) and chroma (the color's purity). But the XYZ color space doesn't match perceived color differences, nor does it describe brightness, the perceived amount of white in a color.

In 1976, development of the CIELAB color space and a 3-D model allowed the inclusion of brightness measurements. The CIELAB color space remains the most accurate way to measure and reproduce color and is supported by scanners, computers and presses used in high-end print shops.

Targeted Functionality

Software such as Photoshop from Adobe Systems Inc. in San Jose lets graphic artists select from a variety of color spaces, including RGB, CMYK or CIELAB, depending on how a file will be used. For an image going to a printer, the artist will use CMYK or CIELAB to specify color separations.

That's because printed images use reflected light. Red ink looks red because its pigment absorbs the light of its complementary color, green. Printers use the separations produced by software to make separate printing plates for each of the four colors (see below).

For a PowerPoint slide show, an artist will use RGB (also referred to as true color) or CIELAB. Using three bytes per pixel in a color image, most monitors, TVs and digital cameras can represent up to 16,777,216 colors. But critics point out that RGB can't reproduce some colors, such as certain violets.

For high-end color reproduction, neither CMYK nor RGB is good enough; both color spaces are device-dependent. Instead, color profiles are used for each output device. A high-end, 24-bit monitor shows colors much truer to the original than a low-end printer.

The device-independent CIELAB color space eliminates some problems. When an image is created, a CIELAB color profile is embedded into the graphics file; reproduction is based on that profile, not on the color space used by the monitor or proofing printer.

However, there are other color spaces used for static images, including very precise color spaces for chemistry and other sciences. And video has its own set of color spaces. To view video on a PC monitor, the image must be converted from various analog video color spaces to digital RGB video. Dedicated hardware components on graphics and video accelerator cards speed this color space conversion.

Organizations like the International Color Consortium in Reston, Va., continue to develop color spaces. But in selecting output devices for most viewing purposes, your first color space is still your best judge: Use your eyes. ◗

SRGB: A Proletarian Color Space

As any Web designer will tell you, a graphic created on a high-end monitor using even the sophisticated CIELAB color space won't look the same when converted into a low-resolution graphic and viewed on a low-end device.

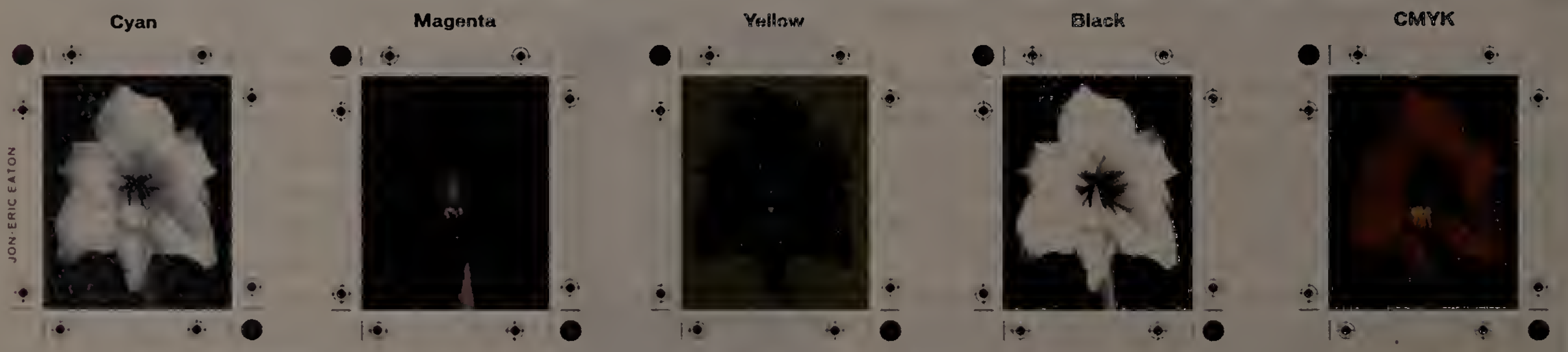
To resolve such issues, Hewlett-Packard Co. and Microsoft Corp. in 1996 defined the Standard RGB (SRGB) color space, which encompasses a narrower range of colors than the conventional RGB color space.

The new color space was necessary, the two companies maintained, because the CIELAB method of ensuring correct color mapping from input to output – attaching a color space profile to the image – was more than most users need. Also, they pointed out, many file formats don't support color profile embedding.

Instead of using the color profile of the output device, as is the case with RGB and CMYK, or embedding it in the image file, as is done with CIELAB, SRGB ships with the operating system and the Web browser as a built-in color manager.

When an RGB image from a high-end scanner or other device is imported into an SRGB environment, however, some color information is lost. What SRGB offers is a lowest-common-denominator view of images in business applications and on Web sites.

– Sami Lais



JON ERIC EATON

COLOR SEPARATIONS make separate plates for cyan, magenta, yellow and black. When the four are printed on top of one another, the pigments mix to create realistic color.

Quick Link
For links to resources related to color spaces, visit our Web site:
www.computerworld.com/q?26621

■ *Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.*

Warning: Complexity Ahead!

GEORGIO PALMISANO

WHO IS HE?

Clay Shirky is a writer, consultant and teacher focusing on the rise of complex, decentralized systems.

Clay Shirky is a writer, consultant and teacher whose specialty is new technologies, especially those for the Internet. He was professor of new media at Hunter College at The City University of New York from 1998 to 2000 and now teaches a course called Thinking About Networks at New York University. He has written for The New York Times, The Wall Street Journal *and the* Harvard Business Review.

Shirky has concentrated lately on the rise of decentralizing technologies such as peer-to-peer (P2P). He recently told Computerworld's **Gary H. Anthes** *why he thinks they will provide both opportunities and problems for IT managers.*

With the advent of peer-to-peer computing, the world of client/server isn't so simple anymore, is it? With a Web server/Web browser pair, client and server are defined for all time. But when you are running Napster or [the instant messaging application] ICQ, sometimes you are behaving as a client and sometimes as a server. And when you look at the implementation of SOAP [Simple Object Access Protocol], it pretty much looks like P2P implementation language.

The idea is that any two computers that can package a SOAP envelope can engage in application-to-application communication. So if everything speaks SOAP, the difference between client and server is really situational; it's not defined in advance.

What does that mean for the IT department? It's tough. With users operating their desktops as servers, it becomes harder to understand what's going on in your enterprise. With something like Groove [Networks'] collaborative P2P software, there is no central file server storing canonical versions of files and backing them up. So the tension in the P2P world is between a great increase in individual productivity vs. a loss of centralized control by the IT department. It's a huge cultural issue, and it's only going to get bigger.

Are IT managers losing control in the face of complexity? It is now physically impossible to operate with an accurate picture of global state. Any local node cannot operate with a picture of what's going on in all other parts of the system. Typically, enterprise software has tried to keep track of everything going on in the system.

The promise of the enterprise resource planning model was that you'll have a globally accurate snapshot of your entire business down to the minute. But that doesn't work past a certain scale.

You've suggested that we look to biological models for ideas. Biological systems operate within a local context. Your kidneys only know what's going on in the kidneys, yet the whole organism functions. The kidneys say, "Here comes some poison, and I'm going to get rid of it." They don't know how the poison got there. They weren't talking to the mouth or the stomach; it just came in for processing.

How can computer systems be made to work like that? Applications become the new objects. They have a great deal of complexity that's encapsulated in a fairly opaque way, and they have a handful of simple, well-documented interfaces in the same way that object-oriented programming uses that as a model for managing complexity.

What does that mean for software developers? Designers of successful applications are going to rely more on protocols and less on APIs [application programming interfaces], in part because protocols are simpler and change less, and in part because they are defined independently of the software. One of the huge surprises of Internet scale is that well-defined protocols, which are almost brain-dead in their simplicity, have superior survival characteristics to beautifully designed and crafted APIs that change once a year.

How will this shift-in-design approach affect end users? Users will see an increase in the number of absolutely inexplicable failures. Systems will fail more often but less catastrophically. In biology, there is much more failure than in computing, but the failure is much less significant. If you have a few cells die, you don't get a blue screen of death. Biological systems have a property called homeostasis, which is the ability to return to some kind of internal norm.

And that ability to return to some kind of norm despite all kinds of external forces is going to be critical for any kind of system exposed to the Internet.

Can you give an example of a system like that? To most people, Napster meant kids stealing music. But to application designers, what it did was build a five 9s [99.999% uptime] service on fantastically unreliable hardware. At its height, Napster had 70 million unpaid system administrators, each operating a tiny, unreliable server. But if you needed a Britney Spears song at 3 a.m., it was there, period. ◗

SANs Get S

Developing a SAN is still tricky, users say, but vendors have finally begun implementing interoperability standards that make design and deployment easier. **By Gary H. Anthes**

UNTIL RECENTLY, storage-area networks (SAN) have gotten a mixed reception. Users have praised their performance and flexibility but criticized their cost, complexity and lack of interoperability. But new products based on current standards have finally begun to address those problems. And practitioners who have been down this road say that lower maintenance and support costs can quickly make up for the relatively high deployment costs for SANs.

But IT managers planning a deployment still face some key issues, and practitioners suggest moving cautiously and doing your homework.

Carefully working with vendors upfront and getting the right experts on board are critical success factors when installing a SAN. For example, MasterCard International Inc. had a good deal of in-house expertise but nevertheless brought in a consultant to help get its tape and disk SANs going.

MasterCard enlisted Stamford, Conn.-based Gartner Inc. and other external sources to help it choose Hopkinton, Mass.-based EMC Corp. as the primary vendor for its disk SAN, says Jim Hull, vice president for computer network services at MasterCard's U.S. processing center in St. Louis. The tape backup SAN uses Fibre Channel switches from San Jose-based Brocade Communications Systems Inc.

A tape subsystem from Storage Technology Corp. in Louisville, Colo., backs up 160TB of online storage located in a series of EMC Symmetrix disk arrays and an IBM Shark Enterprise Storage Server. In all, approximately 195 servers access the SAN-attached data, including a half-dozen Enterprise 10000 servers from Sun Microsystems Inc., an IBM S/390 mainframe and network-attached storage devices.

The consultant helped Purchase, N.Y.-based MasterCard ensure that all of the gear would plug and play with its existing IBM Shark disk storage, management software from Tivoli Systems Inc., StorageTek tape subsystems and other components. The consultant got vendor representatives together for some tough meetings, Hull says. "He did not have ties to any vendor," he says. "He was my hip-pocket resource."

Getting all the components to work together was tricky, Hull acknowledges. "The standards in SAN technology are emerging as we go," he says. "The Brocade and [EMC] Connectrix switches were based on two sets of standards that really weren't standards yet. It looks like within the next year they will play together well, but at the time we did this SAN, they were not."

Continuing growth in data storage needs is pushing even cautious IT managers to consider SANs. OCLC Online Computer Library Center Inc., a Dublin, Ohio-based provider of digital information to 40,000 libraries around the world, saw its data storage requirements increase by 900% in five years. Data on its Windows and AIX servers grew especially fast as OCLC added new databases and services for its members, says Jerry Lynch, division director for operations.

Seeking a way to accommodate that growth without adding IT staff, OCLC tied together the disk storage for its Unix and Windows servers and its IBM S/390 mainframe with a Fibre Channel SAN consisting of Fibre Channel switches from McData Corp. in Broomfield, Colo., along with IBM Shark and StorageTek V960 Shared Virtual Array (SVA) disk storage systems. In addition to acting as the primary online storage for production servers, the SAN backs up data on 1,200 PCs every night. The disk SAN manages a total of about 4TB of data.

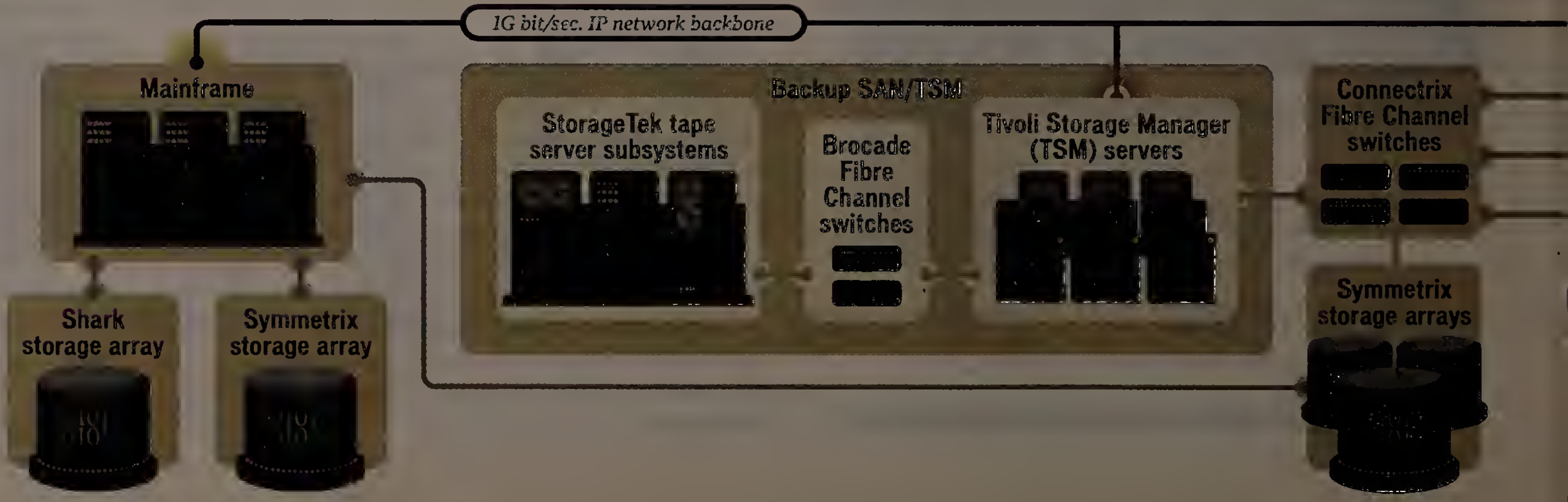
The peaceful coexistence of McData, IBM and StorageTek gear is a tribute to industry standards efforts, Lynch says. "We can plug all three things together, and they won't catch on fire," he laughs.

"I had a Shark on the floor, but the

Five Tips for SAN Survival

1. **Mix and match:** Better standards mean users can finally use the mix of Fibre Channel switches, host bus adapters and target devices that offers the best price and performance, rather than being locked into a single vendor's offerings.
2. **Put your house in order:** To avoid compatibility issues, update all software to the latest releases and apply all patches – especially to operating systems – before beginning a SAN deployment.
3. **Bring in experts for larger deployments:** Even users with in-house expertise say using an experienced, outside consultant can pay dividends.
4. **Smaller is easier:** Turnkey, integrated packages and vendor-provided services may work fine for more limited deployments.
5. **Go virtual:** Storage virtualization software can ease management but may have interoperability and performance issues.

SAN Integration At MasterCard International


1G bit/sec. IP network backbone
Mainframe
Shark storage array
Symmetrix storage array
Backup SAN/TSM
StorageTek tape server subsystems
Brocade Fibre Channel switches
Tivoli Storage Manager (TSM) servers
Connectrix Fibre Channel switches
Symmetrix storage arrays

best deal [to expand capacity] was to bring in a StorageTek SVA," Lynch says. "In the past, prior to the Fibre Channel standard, I would probably have been much more apt to put in another Shark. As it was, I was able to get competitive bids from two different vendors."

Regarding some users' complaints that SANs are tricky to get up and running, Lynch says, "You have to know what you are doing and have business partners and vendors who you can trust and who are engaged." But he says improvements in SAN deployment and administration tools are putting SANs within the reach of less-sophisticated companies.

"The past year has seen dramatic improvement," Lynch says, citing Houston-based BMC Software Inc. in particular. BMC's Patrol storage management and Mainview storage resource management tools, for example, look at storage from both a physical device and an application point of view, and that aids storage planning and administration, according to BMC.

Managing Interoperability

Bill North, research director for storage at IDC in Framingham, Mass., says storage networks are becoming easier to administer as storage and network management tools converge. For example, he cites EMC's recent introduction of its WideSky and StorageScope products, which not only monitor and manage EMC platforms but also include interfaces that allow connections to other vendors' storage systems.

Chuck Kinne, a technology consultant at AT&T Labs in Florham Park, N.J., helped AT&T Solutions install SANs at four locations. AT&T Labs built three of the SANs around Hewlett-Packard Co.'s SureStor XP256 disk arrays and Brocade's SilkWorm 2800 Fibre Channel switches. Each of those SANs will eventually support 90 servers and 3.3TB of data, Kinne says.

"Now they are all HP, but we'll add Solaris and NT, and within six months we'll have all kinds of things attached," he says.

The best way to avoid interoperability problems, Kinne advises, is to use the latest software releases and make sure all the latest patches are applied, especially to operating systems.

Kinne says AT&T went with HP because it was the first to offer a Fibre Channel boot capability, which allows servers to boot directly from the SAN disk array. "I had no internal disk in any of the servers on the SAN, no direct-attached storage. We do everything in the array," he says. That makes management and change control much easier, he adds.

But the most compelling benefit of Fibre Channel boot is the reliability it brings, according to Kinne. "Our No. 1 problem with the servers was with the failure of internal disk drives," he says. "I don't have to worry about disk failures anymore because there is redundancy inside the array."

Kinne acknowledges that it was more expensive initially to set up the SANs than to upgrade the older direct-attached storage, but he says storage administration with a SAN costs half as much. "When you add up the cost of outages, time to do conversions, backup and recovery — all of which are much simpler with a SAN — and then throw in the extra cost of the array and switches, I figure I break even at between 40 and 50 servers on the SAN," he says. "After that, it's gravy."

Kinne's fourth SAN uses EMC disk arrays instead of HP disks, and McData switches rather than Brocade devices. "It provides a measure of competition," he explains. "I can say, 'HP did this; EMC did that. Let's compare price and support.' It keeps them both honest."

You may not need a great deal of expertise to deploy a SAN, says North. "If I'm a neophyte with SANs, I'd work with a company that provides the integration expertise," he says. "Compaq and Dell package up turnkey solutions for particular business problems. They [offer] single-source, multivendor solutions. And they support them as an integrated package." ◗

Percentage of corporate data stored on SANs

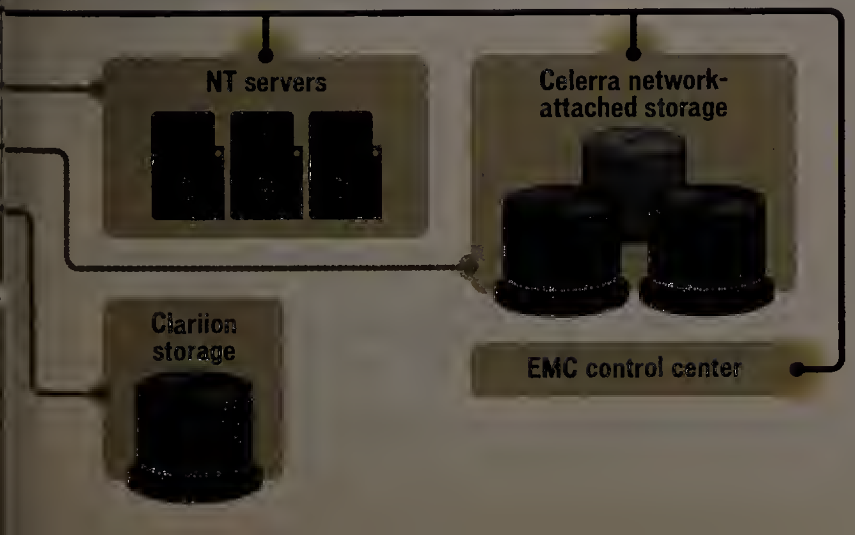
2000	26%
2005*	70%

*Projected

SOURCE: IDC, FRAMINGHAM, MASS.

Quick Link What's the biggest pitfall to avoid when implementing a SAN? Learn the answer and more online: **www.computerworld.com/q?26316**

ensible



MasterCard International's SAN design includes separate disk and tape backup storage networks. Backup data moves between Fibre Channel SANs over the IP network backbone. While the disk SAN uses EMC Connectrix Fibre Channel switches, integrating the StorageTek tape subsystem and Tivoli backup software, which also back up mainframe data, required Brocade units – and those won't talk to the Connectrix switches. Getting the mainframe to connect to EMC storage was also problematic.

"You can't freely allocate storage," says Jim Hull, vice president for computer network services. Fortunately, newer, more interoperable devices from Brocade and EMC should solve these problems, he says.

Storage Virtualization: The Next Step

Storage virtualization software may simplify management, but the technology is still immature, practitioners say.

"I'm watching carefully a little company out of Fort Lauderdale, Fla.," says Jerry Lynch, division director for operations at OCLC. "The user community is going to go nuts for this kind of stuff."

That company is DataCore Software Corp., and the stuff is SANsymphony, storage virtualization software that promises to tie disparate storage devices – including SAN, network and direct-attached storage devices – into one virtual storage pool.

Storage virtualization software separates the server's view of storage from actual physical storage. By presenting storage on disparate physical devices as one central pool, storage management is greatly simplified.

"If we don't do something about storage soon, we are all going to be storage administrators," Lynch says. "The way to get around that is to virtualize it and network it so you can mask the complexity."

"Virtualization creates an abstraction layer between the applications and the physical storage, so it enables simple management of heterogeneous resources," says Steve Duplessie, an analyst at Enterprise Storage Group Inc. in Milford, Mass. "Virtualization enables true homogeneity, so I can have EMC stuff sitting next to Compaq stuff all working like one seamless thing." But the technology is immature; products typically don't yet interoperate smoothly, and although storage virtualization facilitates management, it can adversely affect performance on servers or SAN switches.

Xand Corp., a system hosting firm in Hawthorne, N.Y., has an 8TB SAN and recently installed SANsymphony. Senior Vice President Joe Fuccillo says he hopes it will facilitate the administration of Xand's heterogeneous storage environment, make SAN expansion easier and enable asynchronous data mirroring to storage on off-SAN servers.

But he says Xand will proceed with caution. "Anytime you add another layer between storage and hosts, you have to make very sure it's stable and fault-tolerant," he says.

"Virtualization dramatically increases the amount of storage an administrator can manage," says Dan Tanner, a senior analyst for storage and storage management at Aberdeen Group Inc. in Boston. But, he cautions, virtualization products are emerging piecemeal and may introduce interoperability problems.

Tanner also warns users not to confuse the management of storage devices with the management of storage content. "The mainstream of virtualization today applies to storage space, with only a trickle addressing virtual files – the objects actually being stored in the space created," he says.

– *Gary H. Anthes*

Virus Attacks Can Enter Through Many Doors

Mathias develops a battle plan after identifying openings where malicious code could get past defenses

BY MATHIAS THURMAN

MENTION THE word *virus* to a seasoned information security professional, and he will likely cringe and pass it off as an IT problem. Until recently, I thought the same.

I never paid too much attention to viruses. Instead, there always seemed to be some energetic young employee in the operations center or within the IT group who was the virus guru. He could rattle off the name of most viruses, put them in their respective boot sectors (or categories) and be up to date on all the popular virus protection tools. For most of these folks, virus protection has evolved into a hobby of sorts — or even an obsession.

SECURITY MANAGER'S JOURNAL

In contrast, I've always been more interested in areas such as intrusion detection, penetration testing, firewalls, encryption, single sign-on, public-key infrastructure and so on. However, after the CIO visited my office recently to ask about the status of a virus problem, I decided to take the lead. My company has talked about enterprise virus protection, content filtering at the gateways and attachment stripping, but until now, no one has pulled the trigger. It has become painfully obvious that if someone doesn't put a foot forward, nothing will get done.

Currently, our company's only defense against viruses is antivirus software from Sunnyvale, Calif.-based McAfee.com Corp. on the desktops. We automatically push the vendor's bimonthly signature updates to each user's desktop at boot up. Unfortunately, users don't shut down their PCs each day, so it's difficult to ensure that each desktop is properly protected. We could use enterprise change-management software to automatically send the updates, but at this point we have to rely on users rebooting their machines. By encouraging employees to regularly shut down their PCs and investing in an enterprise configuration management tool, we can easily solve this problem.

But that's not the only issue. Because the antivirus software wasn't properly installed, users can disable it. If we had only a few hundred desktops, reconfiguring them might not be a problem. However, we have more than 4,000 desktops spread across hundreds of remote offices and our headquarters. I'm suggesting that we enforce a strict desktop profile, which restricts a user's ability to stop or make configuration changes to critical software.

Ports of Entry

We are trying to protect the company against more than just viruses. In fact, malicious code can take four forms: viruses, worms, Trojans and hybrid programs.

Before coming up with a defense strategy, I needed to review how malicious code could be introduced into the company. Entry points include the following:

External media: The most common entry point, this includes floppy disks, Zip disks, CD-ROMs and peripheral storage devices. Universal Serial Bus (USB) technology is wonderful. Plug a 250MB Zip drive into the USB port and *voilà* — automatic detection. We can deal with external media by creating a policy to disable all floppy drives as well as USB, serial and parallel ports on the desktop. We can configure the desktop policy so that only administrators can access each system's BIOS (for disabling some of the ports) and the desktop configuration. And we can create exceptions to the policy for those individuals who need it. But those employees will be required to submit written approval from their manager and be asked to sign documentation confirming that they understand the risks involved and the proper use of external media.

E-mail: This is the next most popular entry point. We use Microsoft Exchange Server, which in turn pulls e-mail from a Unix Sendmail server.

E-mail attachments are a popular form of infiltration, especially for executable programs, which employees still run without thinking. One way to deal with this problem at the e-mail gateways is to block all incoming attachments with executable extensions such as .exe, .com or .vbs. Another option is to use the sandbox method, which detaches the attachment from the user's e-mail and runs a check against the file in a protected area of memory. The security software runs the suspicious code to evaluate its result and strips the attachment from the user's e-mail if the code is malicious.

I decided on attachment stripping, because 95% of our employees don't need to receive such attachments. For those who do, we can configure the software to allow exceptions.

Web mail: Employees can bypass corporate e-mail filters and introduce malicious code into the corporate infrastructure by using their Web browsers to access their Yahoo, Hotmail or other Web-based e-mail services. Savvy users may even configure their Outlook mail client to pull personal e-mail from their home Internet provider account.

Our company could restrict access to these sites at our firewall, but that would be an administrative nightmare. Instead, I've decided to combine the desktop virus protection software with an acceptable-use policy restricting users from accessing personal and Web e-mail from the corporate desktop.

Downloads: Users may introduce malicious code when they download programs from the Internet. Since 95% of our employees have no need to download such files, we plan to block outbound file transfer protocol at the firewall for all but a select few who require that capability.

Unpatched operating systems: Operating systems without the latest patches have recently fallen victim to several worm programs. The worms propagate through the Internet and attack Web servers by way of vulnerable ports. Our company needs to establish a policy that ensures that administrators install the proper patches and hot fixes on a regular basis.

Those are the technical issues. But security awareness training is one of the most important methods for preventing malicious code attacks. I assembled a PowerPoint slide presentation to add to our company's employee orientation program. It explains the types of malicious code, how to avoid becoming a victim and what action to take if malicious code is encountered. Employees will be briefed at both their initial orientation and during yearly refresher training.

I'm sure there are other methods that employees might use to introduce untrustworthy programs into our company infrastructure. I think I've addressed many of the potential entry points. Did I miss anything? If so, I invite you to share your thoughts in the Security Manager's Journal forum. ◗

LINKS

Most antivirus software companies offer a range of products for content filtering, e-mail attachment stripping and desktop and file server virus protection. I have used and feel comfortable with the following products:

http://corporate.mcafee.com/content/software_products/default.asp: VirusScan from McAfee.com.

http://enterprisesecurity.symantec.com/content/productlink.cfm#0: Norton AntiVirus from Cupertino, Calif.-based Symantec Corp.

www.f-secure.com/products/anti-virus: F-Secure Anti-Virus from Helsinki, Finland-based F-Secure Corp.

www.finjan.com: SurfinShield from Finjan Software Co. in Los Gatos, Calf.

Quick Link Discuss this week's column and catch up on the latest security developments online at: **www.computerworld.com/q?q2000**

■ This week's journal is written by a real security manager, "Mathias Thurman," whose name and employer have been disguised for obvious reasons. Contact him at mthurman@hushmail.com or go to the Security Manager's Journal forum.

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Start-up Helps Ensure Better Data Backups

Bocada's monitoring, reporting software checks that backup tapes are restorable

BY LEE COPELAND

SOMETIMES it's the little things that cause the biggest problems. Corrupt files, network outages or forgetting to restart the backup tape are all examples of seemingly little errors that can cause big problems when it comes to recovering storage and server data. So says Roger Oedewaldt, a network administrator at a major New York-based financial services company.

"Everyone backs up data, but not everyone restores it," says Oedewaldt, who identified potential recovery problems last fall after he began using BackupReport from Bocada Inc. to check the recovery rates of his company's disaster recovery servers.

The Bellevue, Wash.-based start-up's software monitors backup data and storage server systems, determines whether data has been properly backed up and offers detailed reports on the potential causes of a backup failure.

Restored Confidence

In using the tool, Oedewaldt discovered that 85% of his company's backups contained major errors that made the recovered data either totally unusable or incomplete.

With BackupReport, Oedewaldt says, he was not only able to determine the success of his backups but also able to pinpoint the cause for backup failures. Since then, he has retrained the server operators and thus eliminated the administrative errors that made 60% of backups fail.

"I feel more comfortable with my restores," Oedewaldt says. "I end up restoring corrupt files two to three times per week, but I'm restoring them before the user makes the request, and I am the one telling the user that they lost one day's worth of work."

"We can reduce the chances that a company is not going to be able to recover their data due to a failed backup," says Mark Silverman, Bocada's CEO.

BackupReport offers 16 high-level error summaries on common problem areas such as locked files and configuration and network errors, plus additional drill-down reports. It also supports disaster recovery tools from Computer Associates International Inc., Legato Systems Inc., Hewlett-Packard Co., Microsoft Corp. and Veritas Software Corp.

David Hill, an analyst at Aberdeen Group Inc. in Boston, says data recovery has taken center stage for many companies in the past few months but there have been very few tools that address the issue of monitoring those disaster recovery systems.

"They are filling a vital gap," Hill says of tools like BackupReport. "A lot of enterprises need to know whether their backups are actually being done every night."

Diagnosing Backup Failures

Since October, the University of Washington Academic Medical Center in Seattle has been using BackupReport to drill down into the cause of its backup failures, says Fred Peet, manager of technical services and operations.

Beyond the advantage of determining why backup failures occur, Peet says, the tool also aids in charging back recovery services to departmental users.

"We can identify the number of files by gigabyte per server and per customer for each month," he says. "We understand backup volumes by departments and take the time to analyze those reports over time so that we predict what resources [they use]."

Peet says he wasn't able to charge departments by usage rate prior to installing Bocada's BackupReport. But now he's able to provide printed reports to end users and can predict how fast the medical center's backup data is growing so he can plan accordingly.

Bocada plans to support Austin, Texas-based Tivoli Systems Inc.'s Storage Manager software by midyear, according to Silverman.

The company also intends to add the ability to filter BackupReport based on error type, which will allow administrators to ignore errors that aren't relevant to the diagnosis of the cause of a backup failure. ◗

BOCADA'S software can reduce the chances that a user won't be able to recover data due to a failed backup, says CEO Mark Silverman (center), pictured with Cory Bear (left) and Liam Scanlan.

Bocada Inc.

**3055 112th Ave. N.E.
Suite 202
Bellevue, Wash. 98004
(425) 576-5530**

Web: *www.bocada.com*

Niche: Cross-platform reporting and monitoring utility determines whether tape backups are restorable and identifies the root causes of problems.

Company officers:
- Mark Silverman, CEO
- Cory Bear, co-founder and chief technical officer
- Liam Scanlan, co-founder and vice president of product development

Milestones:
- July 1999: Bocada founded.
- February 2001: Raised $4.2 million in first round of funding.
- September 2001: BackupReport 1.0 launched.

Employees: 20

Burn money: $4.2 million from Madrona Venture Group LLC, Guide Ventures LLC, Second Avenue Partners, Catamount Ventures LP and Steve Hamerslag

Products/pricing: BackupReport 1.0 starts at $2,495 per server.

Customers: Cargill Inc., the University of Washington Academic Medical Center and Immunex Corp.

Red flags for IT:
- BackupReport provides details on all errors; administrators must sort through them to pinpoint the actual cause of a backup failure.
- It doesn't yet support some storage management products, such as Tivoli Storage Manager.

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Spotlight on Reliable Backups

Ensuring the reliability of data backups has long been a problem, says Steve Duplessie, an analyst at The Enterprise Storage Group Inc. in Milford, Mass. "[Data backup is] a universal problem for everyone, but Sept. 11th is bringing the issue to the forefront," he says.

Bocada's product works with backup systems from many vendors, whereas competing products tend to be vendor-specific. That makes Bocada attractive to backup administrators at large enterprises, who typically use several backup systems and would benefit from a common tool, says David Hill, an analyst at Aberdeen Group.

Duplessie says one of the challenges Bocada faces is that it must work to dispel concerns about the viability of start-ups in the current economic climate.

Bocada's competitors include the following companies:

Veritas Software Corp.

Mountain View, Calif.
www.veritas.com

Veritas' Advanced Reporter generates detailed reports on the backup activities of its NetBackup products. The reports offer historical activity for capacity planning, performance analysis or service-level assessment.

Legato Systems Inc.

Mountain View, Calif.
www.legato.com

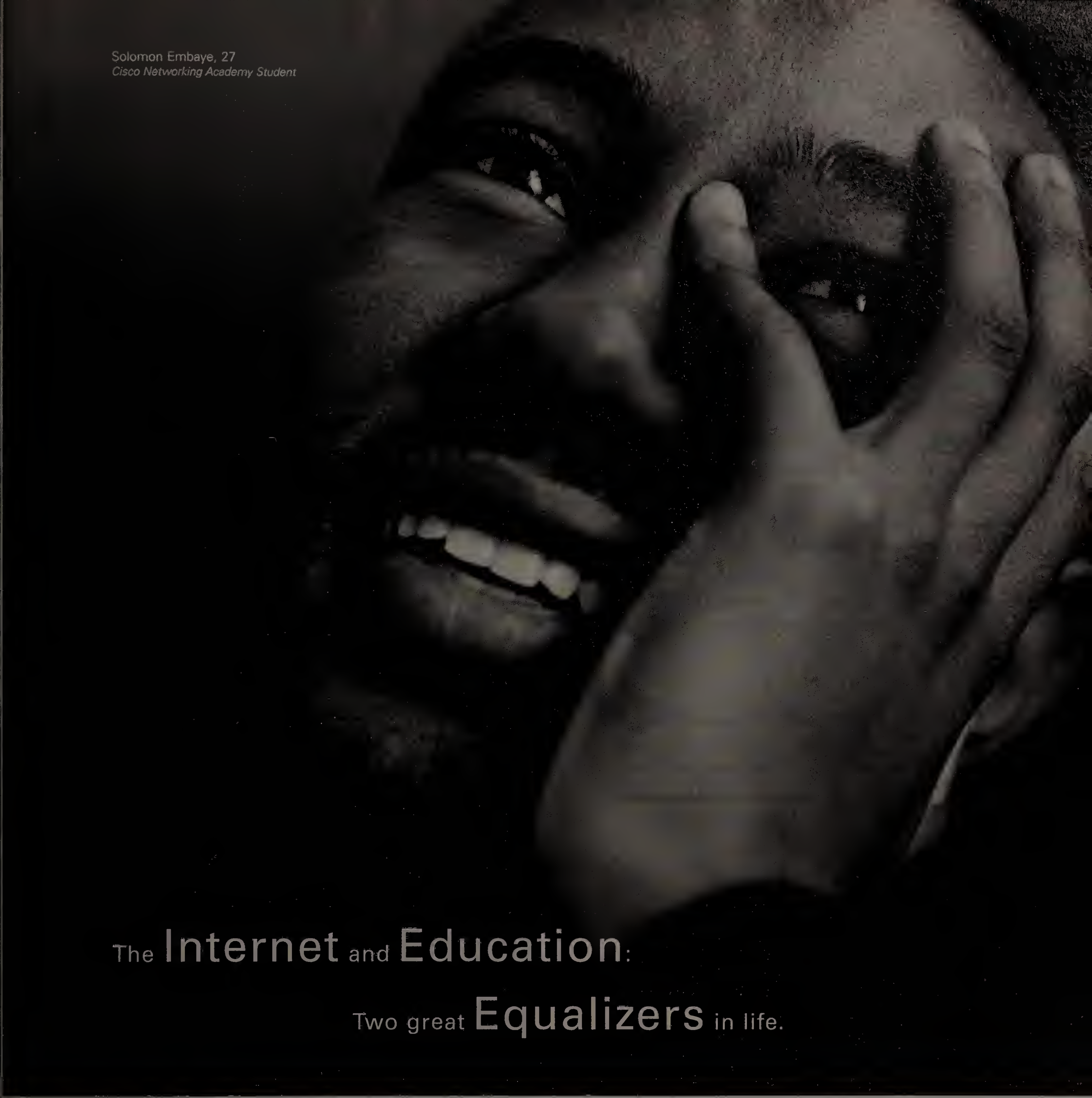
Legato's GEMS Console is a Web-enabled management tool that lets administrators monitor Legato's NetWorker servers and remotely administer the system. It automatically displays the success or failure of each backup.

Computer Associates International Inc.

Islandia, N.Y.
www.ca.com

CA's BrightStor ARCserve Backup software includes the Storage Report Manager utility, which generates a data backup success report after a job is processed that includes failure and error codes. The product also includes a tape server log, which determines whether a hardware or software problem is the true cause of a failure.

–Lee Copeland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IT Careers in Wireless/Telecom

While the telephone equipment market isn't expected to rebound until late 2002, wireless communications companies continue to consolidate. With consolidation, comes opportunities for IT professionals linked to the variety of systems and technology needed to integrate the merged companies that became Verizon Wireless.

Diane Litchko, associate director for IT staffing at **Verizon Wireless** in Bedminster, NJ, says that **Verizon Wireless'** 2000-2001 IT merger activity has focused on converging 13 different billing systems into eight. That will now be reduced to two or three final systems over the next several years. The company also just announced it would be acquiring certain Dobson Communications Wireless and Price Communications Wireless Operations to extend its service in the Southeast, Midwest and West regions of the country. "That means we will be incorporating these new operations into the company, requiring still more conversions of our business systems," she explains.

To lead these conversions, **Verizon Wireless** hires specific skills. These include the COBOL developers who will enhance and maintain the billing systems and DB2 developers and administrators who may work with the point-of-sale systems. "On our back-end operations, we look for JAVA development experience, UNIX administrators, PeopleSoft and Oracle database administration skills," she adds. "Our e-mail system operates on NT, so that type of technical background also has potential. To a much lesser degree, we continue to selectively hire telecom and LAN/WAN talent."

Litchko says that with the current state of the economy, there aren't as many openings at **Verizon Wireless** as a year ago. "But we continuously reevaluate to assure we have needed skills," she says. "We are now strategically hiring to meet our business plan. We look for people who have an ability to work on teams, who have skills in project management and who can lead and communicate. We really stress that individuals take accountability for their work, their customer relationships, quality and innovation."

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For more job opportunities with telecom/wireless firms, turn to the pages of ITcareers.

- If you'd like to take part in an upcoming ITcareers feature, contact Janis Crawley, 650.312.0607 or janis_crowley@itcareers.net.
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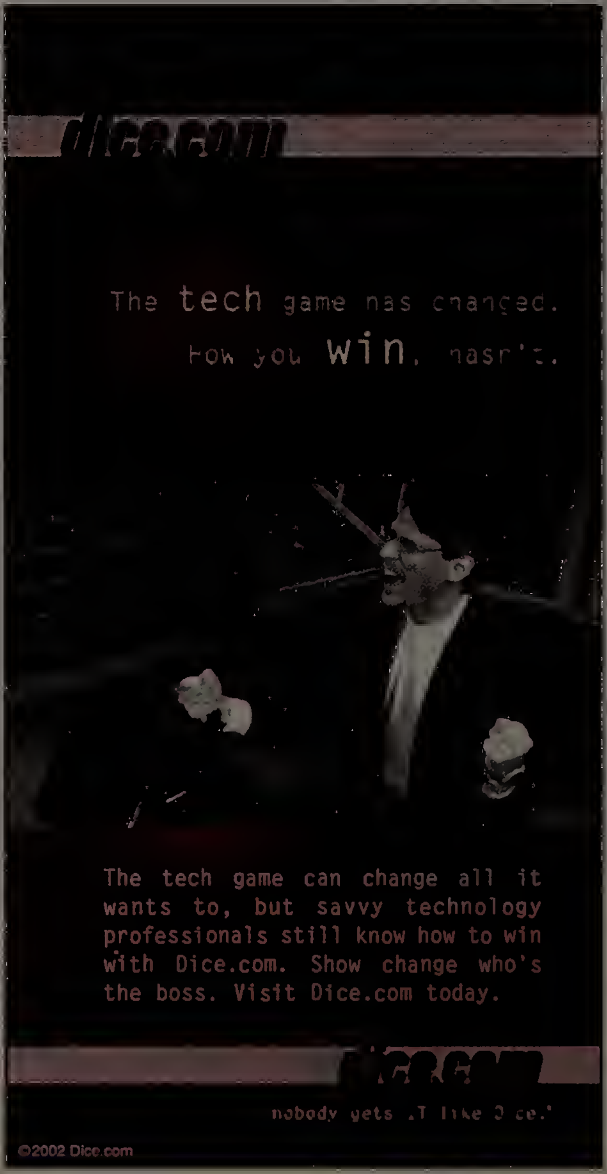
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Sr. S/W Engg. wanted by NJ based co. for locs throughout US. Must have Master's degree and 5 yrs. exp. in Comm. Comp. S/W dev. and/or consulting and proficiency in C/C++ and Real time systems. Respond to: HR Dept., (Ref: GG8058IM) UTStarcom, Inc., 33 Wood Avenue South, 3rd Floor, Iselin, NJ 08830. No phone calls please.

Mgmt/Systms Anlysts reqd to upgrade MIS & reportg procedures, review comp systm capabilities, prep workflow charts & diagrams, study & dvlp new info systems, prep tech reports & instruction manuals. Use Win 98/3.1, Win NT Server & Win NT Workstation, MS Excel, MS Access, MS Powerpoint, Netscape & Internet Explorer, Novell Netware O/S. Bach in Engg/Math/Sci/MIS/Busn Admn or equiv +6 mos exp. Respond to Rahul Rametra, ATEC Group, Inc., 69 Mall Dr., Commack, NY 11725.

MatrixOne, Inc., a leader in product development management software, seeks to fill the position of Managing Director of Professional Services in their Chelmsford, MA office. Position requires a degree and managerial-level work experience, or in the alternative, extensive project management experience in a demanding consulting organization employing a broad sweep of technologies including ERP, PDM, CAD, Viewers and Integrations. Must be willing to travel 95% of the time to customer sites. If interested, send resume to: Alison Kiefer, HR Representative, MatrixOne, Inc., Two Executive Drive, Chelmsford, MA 01824, via fax: 978-441-0071, or e-mail alison.kiefer@matrixone.com

BEST Consulting seeks IS Admin. for Kirkland office. DESC: Dsgn, impl, & admin. RDBMS & rel. c/s & middleware apps. util. SQL, C, Java, SGML/XML, Perl, PHP, & Unix Shell. Prov. TCP/IP netwk. admin. & sup. Dsgn & impl. LAN & WAN. Prov. UNIX sys. admin, sup, & rel. s/w dev. Prov. Internet & sys. security util. firewall, encryption, & authentication techs. REQ: BS in Engr, CS, Math, or Phys. + 2 yrs. exp. in duties listed above. Prem. sal + benes. Pls. reply to J. King, Job #CCL-88, 11255 Kirkland Way, Kirkland, WA 98033.

Senior Notes Application Developer wanted. Must have Bach. deg. in Comp. Sci., Eng. or related field & 3 yr. exper. with Lotus Notes, incl. exper. in website technology & developing workflow projects. Send resume to Jane McInnis, Employment Admin., HR Dept., Fed. Reserve Bank of Boston, 600 Atlantic Ave., T-3, Boston, MA 02106-2076. The Fed. Reserve Bank of Boston is an equal opportunity employer.

Software Engineers (multiple positions) with embedded software experience sought by telecommunication systems co. in Shrewsbury, NJ. Must have Bach or equiv in Comp Sci, Engg or equiv & 5 yrs exp. Respond to: HR Dept., Parama Networks, Inc., 1030 Broad Street, 1st Floor, Shrewsbury, NJ 07702.

◆

SW Training Instructors: Devlp & teach sw courses in a Sun Microsystem certified edu facility in class & on site of all Java related sw, XML, OOSE, Oracle, Sun Sparc workstation, Sun Solaris, etc. 40h/w, 8-5, MS in CS/CE/EE or foreign equivalent, Sun Certified Instructor for each course, & 1-yr wk exp in job offered or in any other posit'n involv'g J2EE, XML & OOSE. Resume to Gateway Comp Asso. Inc. 11500 9th St. N., #120, St. Pete, FL 33716/ jim.quasius@gca.net.

Software Engineer. Develop interactive multimedia software and administer servers for health education. Design multimedia training in Macromedia Flash, track progress and usage with OLAP analysis. Must have B.S. in Computer Science or Engineering, and knowledge of Microsoft platform, ASP, Visual Basic, SQL Server, IIS, and XML. Send resume and cover letter to M.Ajam, Patient Education Institute, Inc., 100 Oakdale Campus, W108-OH, Oakdale, Iowa 52319.

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DBA, Nashua, NH, Design, customize, install & configure databases; manage, administer & monitor databases for performance tuning; monitor system & database performance; coord physical changes to databases; test systems, correct errors & refine changes to databases; design logical & physical system architecture; use C/C++, Oracle Enterprise Manager DBA Studio, UNIX, Microsoft SQL Server, MVS, relational database design & Crystal Reports. Qualifs: MS Comp. Sci/Eng, plus 1 yr. exp in job offrd. 40 hrs/wk, 9am-5pm; $70,600 per yr. Send two copies of res/ltrs of applic. to Job Order # 2001-293, P.O.Box 989, Concord, NH 03302-0989.

Computer Positions: Programmer Analyst, System Analyst, Software Analyst, Network Analyst, Systems Engineers, Network Engineers, Database Analysts, IT Marketing Specialist, and other technical professional. Multiple openings, nationwide Client sites. We need professionals with at least a bachelor's degree in computer science, engineering, mathematics, statistics, related technical fields, or any business and 1+ year of relevant experience. Fax resumes to 212-224-5082, Att: Dept. MILL

SOFTWARE ENGINEER to design, develop, test and implement software for various client server banking applications using C, C++ with MFC, COM, Visual Basic, Visual C++, ActiveX, ADO, PowerBuilder, Oracle, VMP Forms and VMP I-32 Design on Windows NT, Novell and AIX platforms. Require: B.S. degree in Computer Science/Engineering, or a closely related field with the five years of progressively responsible experience in the job offered or as a Programmer/Systems Analyst. Competitive salary offered. Send resume to: Aimee Krempa, Assistant VP, HR, Flagstar Bancorp, 5151 Corporate Drive, Troy, MI 48098-2639; Attn: Job JD.

Programmer Analyst. Sought by Englewood Colorado consulting company to work in various unanticipated locations throughout the U.S. Analyze, plan, develop, test, and document computer programs including network communication programs. Evaluate user requests and software program requirements for new and modified programs. Write specifications, code, test, and debug computer programs. Customize hardware and software to client needs. Use of MVS/Xa, MVS/ESA, IBM Mainframe, VSAM, JCL and TSO. Reqs. Bachelors in Computer Science or Computer Engineer or related field of study. Plus 1 year in the job offered or 1 year in a related occupation such as a System Programmer. $51,500/year, 40/hrs/wk, 8AM-5PM. Respond by resume to Colorado Department of Labor & Employment, Employment Programs, ATTN: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe St., Denver, CO 80202-2117, and refer to Job Order No. CO 5011139

Programmer Analysts: To work in various unanticipated locations throughout the U.S. Duties: Under direct supervision, design, develop, code, test and implement software applications. Analyze client requirements and design and develop software applications to meet client specifications and goals. System testing and installation. Use of IBM Mainframes, COBOL, CICS, IDEAL, DB2 and IMS. Bachelor's degree or equivalent in Computer Science, Electrical or Electronic Engineering, Mathematics or its equivalent in education and/or experience, plus 2 years in the job offered or 2 years in a related occupation including Programmer or Systems Analyst. Will accept 2 years college education and 6 years of experience in lieu of required education and experience. 40 Hrs/wk, $52,000/yr. Must have proof of legal authority to work in the United States. Send your resume to Iowa Workforce Center, 2740 S. 17th Street. Clinton, IA 52732-7040. Please refer to Job Order IA1101427. Employer paid advertisement.

SOFTWARE ENGINEER to design, develop, implement, test, maintain and support application software and web-based GUIs for the telecommunication industry using object-oriented programming techniques, Java, J2EE, C, C++, HTML, XML, XSL, Oracle, Visual Basic and UML under Windows NT/95/98/2000 and HP-UX operating systems. Require: M.S. degree in Computer Science/Engineering, or a closely related field with one year of experience in the job offered. Experience gained before or after earning the M.S. degree will be accepted. Extensive travel assignment to various client sites within the U.S. is required. Competitive salary offered. Apply by resume to: Eduardo Santos, President, Custom Software Solutions, Inc., 1002 Williamson Lane, Snellville, GA 30078; Attn: Job RG.

DBA, Nashua, NH, Coord physical changes to computer databases; design logical & physical databases; create database schemas for meta-and logging data; analyze current Oracle database design; design & develop various software modules; handle back-up & recovery procedures for the dvlpmnt & production of databases; code, test & implmnt physical databases; monitor Oracle databases for performance tuning; install & administer various Oracle applics; use Oracle Developer 2000, MS SQL, Oracle, Windows NT, TCP/IP, Sun Solaris, & ERWin 3.x. Qualifs: MS MIS, plus 1 yr. exper in job offrd. 40 hrs/wk, 9am-5pm; $77,000 per yr. Send two copies of res/ltrs of applic. to Job Order # 2001-565, P.O.Box 989, Concord, NH 03302-0989.

Programmer Analyst: To work in various unanticipated locations throughout the U.S. Duties: Under direct supervision, analyze, plan, develop, test and document computer programs including network communication programs. Evaluate user requests and software program requirements for new and modified programs. Write specifications, code, test and debug computer programs. Customize software to client needs. Use of C, C++, FoxPro, Java, Oracle, Visual Basic and Windows NT. Bachelor's degree or equivalent in Computer Science, Computer Engineering or related field. Plus 1 year in the job offered or 1 year in a related occupation including Computer Programmer, Software Engineer or Programmer. 40 Hrs/wk, 8AM-5PM/$48,000/yr. Must have proof of legal authority to work in the United States. Send your resume to Iowa Workforce Center, 2740 S. 17th Street. Clinton, IA 52732-7040. Please refer to Job Order IA1101513. Employer paid advertisement

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DBA, Nashua, NH, Design, customize, install & configure databases; provide Database Administration in the area of bus systems & applics; coord physical changes to databases; monitor Database for performance tuning, handle backup, recovery & security issues; review & optimize stored procedures & triggers; install & maintain Dataservers & replication servers; use Oracle Developer, UNIX/System Administration, C/C++, Windows NT, SQL, ORACLE, SQL, Java, and Perl. Qualifs: MS in Comp. Sci, plus 1 yr. exper in job offrd. 40 hrs/wk, 9am-5pm; $77,000 per yr. Must have Oracle DBA cert. Send two copies of res/ltrs of applic. to Job Order # 2001-567, P.O.Box 989, Concord, NH 03302-0989.

FINANCIAL

IS Manager. (Los Angeles, CA position). Requires a Master's Degree in Business Administration with a concentration in finance & 2 years' exp. in the job offered or 2 years' exp. in the design of financial management systems in the food service industry using IT tools. Stated experience must involve developing financial management systems for use in planning production & inventory strategies in the airline catering industry; & formulating & applying mathematical modeling & other optimizing methods to develop & interpret information that assists management with operational decision-making. 40 hours/wk. Send resume to Vidal Mora, Sky Chefs., Inc. 524 E. Lamar Blvd., Arlington, TX 76011.

Programmer Analyst: To work in various unanticipated locations throughout the U.S. Duties: Convert project specifications and statements of problems and procedures into detailed logical flow charts for coding into computer language. Develop end write computer programs to store, locate and retrieve specific documents, deta, and information. Program web sites. Bachelor's degree or equivalent in Computer Science, Computer Engineering, Economics, Statistics or related field. Plus 1 yeer in the job offered or 1 year in a related occupation including Analyst Programmer, Programmer or Systems Analyst. 40 Hrs/wk, 8 am-5pm/$45,000/yr. Must have proof of legal authority to work in the United States. Send your resume to Iowa Workforce Center, 2740 S. 17th Street. Clinton, IA 52732-7040. Please refer to Job Order IA1101483. Employer paid advertisement

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Contact the Corporate Headquarters for positions available in the following areas; Atlanta, Chicago, Connecticut, Denver, Florida, Massachusetts, New Jersey, New York, North Carolina, Pennsylvania, Phoenix, Southern California, Texas, Virginia/DC.

For consideration please reference Job Code: RIRCW07 and send your resume to: RCG Information Technology; Attn: National Recruiting, 379 Thomall Street, Edison, NJ 08837; FAX: (732) 744-3583 or email to: recruit@rcgit.com. We are an Equal Opportunity Employer. M/F/D/V.

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Computer Positions: Programmer Analyst, System Analyst, Software Analyst, Network Analyst, Systems Engineers, Network Engineers, Database Analysts, IT Marketing Specialist, and other technical professional. Multiple openings, nationwide Client sites. We need professionals with at least a bachelor's degree in computer science, engineering, mathematics, statistics, related technical fields, or any business and 1+year of relevant experience. Fax resumes to 212-224-5082, Att: Dept. C.

NETWORK ADMINISTRATOR to install, configure, administer, implement and troubleshoot local and wide area networks under Windows NT/2000 operating systems; Manage and configure SQL Server, Internet Information Server, DHCP, DNS, WINS and RAS in Windows NT/2000 environments; Link business objectives with networks and performances; Develop system applications using Visual Basic, ASP, IIS, Crystal Reports, SQL Server, MTS, Visual Source Safe, Install Shield, Erwin and Rational Rose under Windows NT/2000 operating systems. Require: B.S. degree in Computer Science, an Engineering discipline, or a closely related field with four years of experience in the job offered. Extensive travel on assignment to various client sites within the U.S. is required. Competitive salary offered. Apply by resume to: Ravi Kandimalla, President, Everest Computer Inc., 900 Old Roswell Lakes Parkway, Suite 300, Roswell, GA 30076; Attn: Job AM.

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Email: cwjobs@hcltech.com

Please indicate the location and the position you are applying for.

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Systems Analyst needed for IT Development and Consulting Firm located in Cedar Rapids, IA. Job duties include: Analyze, design, develop and maintain system applications using: File-Aid, UNIX, MVS, JCL, COBOL II, PVCS, IDMS, VSAM, Xpediter, IBM 3090, C++ and Websphere. Applicant must have a Bachelors Degree in Computer Science, Mathematics or Engineering. Applicant must have 4 yrs. exp. in the job duties listed above or 4 yrs. exp. in any computer related field. Job requires not less than 4 yrs. exp. in File-Aid, UNIX, MVS, JCL, COBOL II, PVCS, IDMS, VSAM and Expediter, IBM 3090, C++ and Websphere. Mon-Fri, 8:00 am to 5:00 pm, $53,669.00/yr. Must have proof of legal authority to work in the US. Send your resume and cover letter to: Iowa Workforce Center, 800 Seventh St. SE, Cedar Rapids, IA 52406. Please refer to Job Order IA1101496. Employer paid advertisement.

Software Engineer, Nashua, NH, Analyze, design, test, develop, maintain & implmnt various software sys and applics; research, deliver & enhance internally developed software applic & resolve problems using related technologies; create & manage file sys across WIN UNIX platforms; create & manage data on network performance; define & determine bus & sys requirements; code, review, repair, test & modify software programs to ensure the tech accuracy of the programs; manage system backups & disaster recovery; use C, C++, Windows NT, ASP, PL/SQL, Developer 2000, Oracle, and SQL Server. Qualifs: MS in Applied Math, plus 1 yr. exper in job offrd. 40 hrs/wk, 9am-5pm; $74,800 per yr. Send two copies of res/ltrs of applic. to Job Order # 2001-566, P.O.Box 989, Concord, NH 03302-0989.

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Information Security Specialist - Exp. with SAP security administration. Must also have exp. with SAP security profile creation and administration.

Enterprise Project Manager – Manager Data Portals - Exp. in integration of application systems and system development. Must also have exp. with MQSeries, Windows NT, HP-UX, Connect: Direct, Mercator, integrating SAP in a heterogeneous environment, and leading a team through a systems development lifecycle

MAIL resume to Mary Lou Simo, Nestlé USA, Inc., 800 N. Brand Blvd., Glendale, CA 91203. NO PHONE CALLS OR THIRD-PARTY AGENTS PLEASE.

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Kmart

supply chain enhancements" during its reorganization.

Kmart has experienced escalating difficulty in competing against Wal-Mart Stores Inc. and Target Corp., and it now faces significant business and technological challenges.

Kmart's most recent IT instabilities began to surface in August, when the company announced that Randy Allen would exit her CIO post to become executive vice president of strategic initiatives and chief diversity officer. Less than a year before her reassignment, Allen left New York-based Deloitte & Touche Consulting to become Kmart's fifth CIO since 1994.

CIO-less

Kmart has yet to hire a CIO to replace Allen, said spokeswoman Susan Dennis. Vice Presidents Karen Austin and Marc Congdon currently oversee IT operations, Dennis said.

Just a year ago, Kmart had touted Allen's expertise in supply chain effectiveness, merchandising and logistics. So, not surprisingly, questions started to swirl after Kmart announced that it would take a $195 million write-off — with $130 million due to the "impairment" of supply chain software and hardware that the retail chain would no longer use. The other $65 million in charges related to the exit from outdated distribution centers, Kmart said.

Dennis said a portion of the write-off was for an extensively modified warehouse management system from Dallas-based Exe Technologies Inc. that Kmart had installed in 1997. The retail chain found that the system "was not doing the job we needed it to do to meet our business demands," so it's moving to a new warehouse-management system from Atlanta-based Manhattan Associates Inc., she said.

Peter Abell, an analyst at Boston-based AMR Research Inc., questioned that move, particularly given Kmart's financial difficulties. Abell said many companies have found the Exe package to be very solid for consumer packaged, or hard-line, goods. Manhattan's system, in contrast, is cited as an effective system for apparel, or soft goods, he said.

"To write off a whole lot of money doesn't make a lot of sense to me," Abell said. "There truly would be a business case to say, 'Why can't you live with both packages that do well with their respective goods?' "

Kmart's write-off has also fueled speculation about the discount retailer's large investment in supply chain software from Dallas-based i2 Technologies Inc.

AMR analyst Greg Girard said his firm confirmed that part of Kmart's technology writedown was related to some portion of its i2 investment. Neither Kmart nor i2 would comment.

Steve Robinson, i2's executive vice president of product marketing, acknowledged that some i2 projects at Kmart have stalled. He said the retailer implemented two of i2's transportation packages, Global Logistics Monitor and Freight Matrix, but it held back on other systems.

Robinson said a group running information systems had prioritized technology when Kmart purchased various i2 software applications in 2000. But in the first quarter of last year, a new management team came on board and decided to get back to business fundamentals ahead of the technology implementations, he said.

"I believe their plan was to re-engineer the business processes first and then come back with a technology implementation that would allow them to sustain the value," Robinson said. He added that his understanding prior to the bankruptcy announcement was that Kmart intended to proceed with some i2 projects.

What the bankruptcy court will permit Kmart to do remains to be seen. Nevill said Kurt Salmon Associates worked with Edison Brothers Stores Inc. in St. Louis when it sought bankruptcy protection in 1999 and the court was hesitant to approve IT spending.

Nevill noted that the bankruptcy court has to protect creditors, adding that money spent on consulting or hardware depreciates quickly and that funds spent on software can lose their value completely, making it difficult to recoup if the business ultimately fails.

But it isn't unprecedented for a bankruptcy court to look favorably on IT spending. Lindsay Parker, a consultant at Deloitte & Touche LLP, said that Cincinnati-based Federated Department Stores Inc., owner of Macy's and Bloomingdale's department stores, was able to convince the court that supply chain improvements were critical for the firm to emerge from bankruptcy, which it did in 1992. ◗

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Kmart's business strategy also played role in its plight. **www.computerworld.com/q?26742**

MORE THIS ISSUE

Columnist Frank Hayes says lack of IT did Kmart in. **Page 54**

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Sears

gle server. The company said it's trying to make it easier for users to combine information stored in the data warehouses.

For example, Sears can now track sales down to levels such as how many size 6 spaghetti-strap cocktail dresses it sold in any of its stores on a particular day. But the $41.1 billion retailer can't see whether any of the buyers of those dresses also bought a swimsuit that day, indicating that they might be planning vacations.

That kind of knowledge would let Sears do targeted promotional mailings on other products, such as sunglasses in the case of the swimsuit buyers, said Jonathan Rand, director of merchandise planning and reporting at the Hoffman Estates, Ill.-based company.

The storage rollout will increase the EMC Corp. disk capacity that Sears has installed to 140TB. Sears said it's buying another 20 of Hopkinton, Mass.-based EMC's Symmetrix disk arrays, plus a new WorldMark Unix server and a Teradata database from NCR Corp. in Dayton, Ohio.

The technology will be used to combine the two data warehouses at an unspecified data center in Illinois, Rand said. Currently, he added, the data warehouses are located at facilities in different states and don't share data efficiently.

About 70TB of the new storage capacity will be devoted to the data warehouses, which will remain physically separate but will be able to interoperate with one another. The warehouses are scheduled to be running in parallel by the start of April, Rand said.

Sears is also working with EMC to wire together a 25TB storage-area network (SAN) that will be used to link data residing on various Unix and Windows NT servers supporting applications in areas such as human resources and enterprise resource planning.

The SAN technology was installed last month and is expected to be up and running soon, Rand said. The network will use Fibre Channel switches to pool storage resources for Unix servers made by Sun Microsystems Inc. and Windows NT systems from Compaq Computer Corp.

Sears officials declined to disclose the cost of the project. But according to Steve Duplessie, an analyst at The Enterprise Storage Group Inc. in Milford, Mass., the price of the EMC and NCR hardware is likely to be as high as $15 million. "It's millions in just gear costs, and it'll be more millions in services to get from Point A to Point B," Duplessie said.

Wider Effort

Sears' data warehouse consolidation is part of a wider effort by companies to use their customer information more effectively, Duplessie added. While many users have already moved their data storage systems into the same data centers to simplify management, he said, different databases often still can't communicate effectively with one another.

About 5,000 Sears employees use the two data warehouses for analytical purposes, Rand said. They can get daily product sales information now, but the data doesn't show what individual customers bought and correlate that with previous purchases.

Once the consolidation is completed, Rand said, Sears will be able to more tightly integrate data about customer buying habits with its inventory and sales records. "Obviously, with better information, we'll be able to make quicker decisions," he said.

The project should also speed up response time for end users because of an upgrade from the 450-MHz Intel Corp. processors used in the retailer's current NCR servers to the 900-MHz Pentium III Xeon chips that are built into the new system, Rand added.

In addition to the hardware purchases, Sears is installing a mix of new storage management tools from EMC. ◗

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FRANK HAYES/FRANKLY SPEAKING

Lessons From Kmart

WANT TO TAKE SOME lessons from Kmart and the biggest retail bankruptcy filing in history last week? Try this: If you cut IT spending in the short run when business is bad, you're cutting off your own air supply. And try this: If you wait until times are good to loosen the IT purse strings again, it may be too late.

Yes, Kmart got squeezed between slightly upscale Target and deep-cut discounter Wal-Mart. Sure, its stores were old. Yeah, it used newspaper ads instead of TV commercials.

All those things hurt Kmart. But what did Kmart in was IT.

Or rather, the lack of IT. And modern logistics and supply chain management. And up-to-date in-store technology.

Want to know how bad things were? In 2000, when Kmart finally decided to invest in IT, the company bragged that the two-year, $1.4 billion upgrade plan was "more money than Kmart has spent in the last decade on IT."

That stinginess cost Kmart three CIOs in the space of five years in the 1990s. It also took away any hope of catching Wal-Mart, which was marching out of the South and into regions where Kmart thought it had already won the discount retailing battle.

Sure, Target was everywhere Kmart was. But Target was really a downscaled Dayton-Hudson department store — it would never reach any farther down. Kmart was an upsized S.S. Kresge five-and-dime store. And 10 years ago, across most of the U.S., Kmart had the low end of discount retailing all to itself.

At least until Wal-Mart arrived in town after town. Wal-Mart had cutthroat pricing, supported by solid logistics. And wherever Wal-Mart showed up, complacent Kmart lost. By the mid-1990s, Kmart was in trouble and losing money.

FRANK HAYES, *Computerworld*'s senior news columnist, has covered IT for more than 20 years. Contact him at **frank_hayes@computerworld.com**.

Kmart's response? The IT budget evaporated.

While Wal-Mart was pouring money into IT, Kmart's IT budget got smaller. And not just once, but several years in a row.

So while Wal-Mart's logistics and supply chain management got sharper, Kmart's stagnated. While Wal-Mart's IT staff grew, Kmart's shrank. And while Wal-Mart was able to squeeze ever more value out of its stores and its systems, Kmart lost ground.

In five years, Kmart went from being *the* IT leader in retail to an embarrassment. Kmart was not just an also-ran — it wasn't even in the race.

But Kmart still might have come back. When management gave the OK for that $1.4 billion systems overhaul in the summer of 2000, it looked possible. When freshly minted CEO Chuck Conaway hired former Deloitte Consulting retail maven Randy Allen as CIO in September 2000 and gave her responsibility for corporate strategic planning as well, a comeback actually started to look likely.

The money was there. The clout was there. And even when pilot projects with new supply-chain software began running into problems in early 2001, it still looked like Kmart could turn things around. It would just take a little longer.

Then the recession hit. And the clock ran out for Kmart.

Kmart may yet emerge from bankruptcy protection. If it does, it will still have all of its marketing problems, all of its business process problems, most of its IT problems — and a much tougher time dealing with all of them.

What Kmart won't have is any serious chance of challenging Wal-Mart or Target. That opportunity disappeared in 1996, when Kmart's IT budget dried up and blew away.

So in these lean times, when your CEO tries to sell you the idea that IT spending is mandatory in the long run but discretionary in the short run, remind the boss about the Kmart catastrophe.

Because whoever you are, you've got a competitor like Wal-Mart out there somewhere. And that means the short run may be the only chance you've got to keep your company in the race. ◗

SHARK TANK

SCHOOL DISTRICT servers are underpowered for all the traffic they have to handle, reports insider pilot fish. So new high-performance servers are installed – but the network is still unusable. IT boss's explanation to the school district staff: "Before, the servers didn't have enough memory to hold and process all the information. The new servers are so big that the information is getting lost."

LAN ADMIN pilot fish asks IT director for a shorter Web address. IT director's response: "Use a smaller font."

CONSULTANT WINS a bid to buy and install color printers on the network for this office. But as soon as the job is done, IT support pilot fish gets calls from users complaining that their printouts are still in black and white. Fish discovers that the contractor never installed color printer drivers on users' PCs. Contractor's answer: "You wanted to print in color? You only said you wanted color printers."

SOMETHING'S WRONG with the type-ahead feature in this pilot fish's copy of Lotus Notes: It inserts the wrong address when he tries to send a message to the help desk. Fish finally sends help desk a handwritten description of the problem and gets this reply: "We only support the type-ahead feature if it's disabled."

DATA CENTER manager's penny-pinching results in lousy network reliability, pilot fish reports. So an ultimatum comes down from senior management: Come up with a solution that guarantees 100% uptime. Manager smugly informs staff that they'll add a second carrier to all their key network links. "Then, when we have that redundancy built in, we'll get rid of the first carrier – they're charging us too much," he says.

Tell me your tale: **sharky@computerworld.com**. You get a stylish Shark shirt if your true story of IT life sees print – or if it shows up in the daily feed at *computerworld.com/sharky*.

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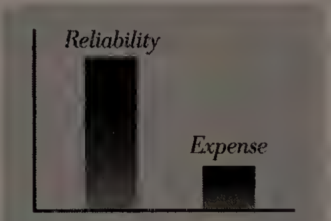

Fig. 1. iSeries Value Proposition.

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Save up to 38% vs. Exchange 2000. If reliability and consolidation aren't reasons enough, consider this: Migrating your Outlook system to Domino for iSeries can cost up to 38% less than upgrading both your hardware and software to Microsoft Exchange 2000.[1]

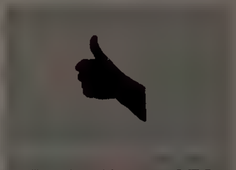

Fig. 2. Happy CFO.

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